PENNSY's 38,000-GALLON RAIL WHALES BEGIN TESTS p. 26

4

FEBRUARY 14, 1966

RAILWAY AGE

WEEKLY

CONCRETE TIES make the grade on SAL

RI's bridge beams of hollow concrete

Two experts look at prestressing

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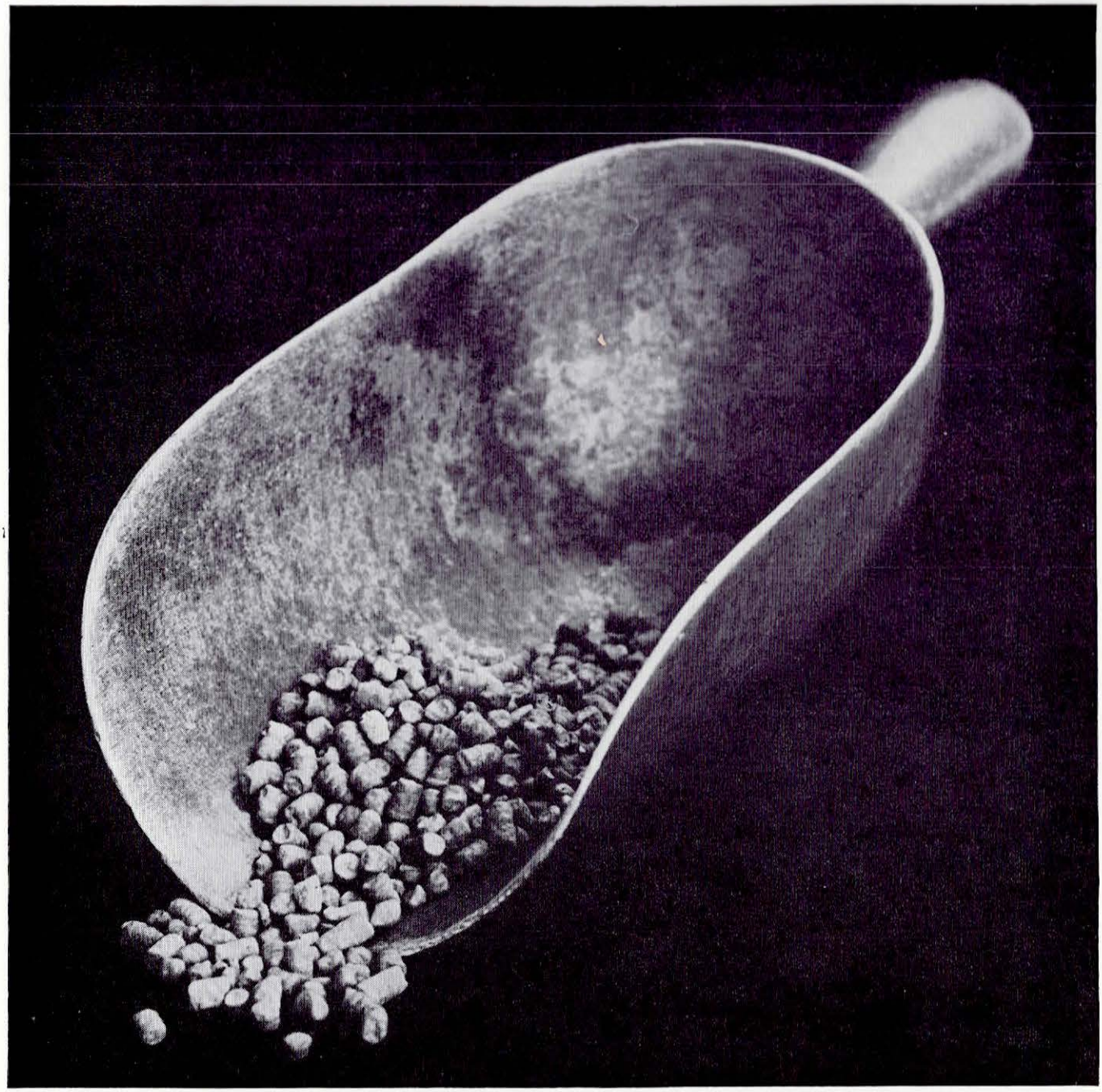

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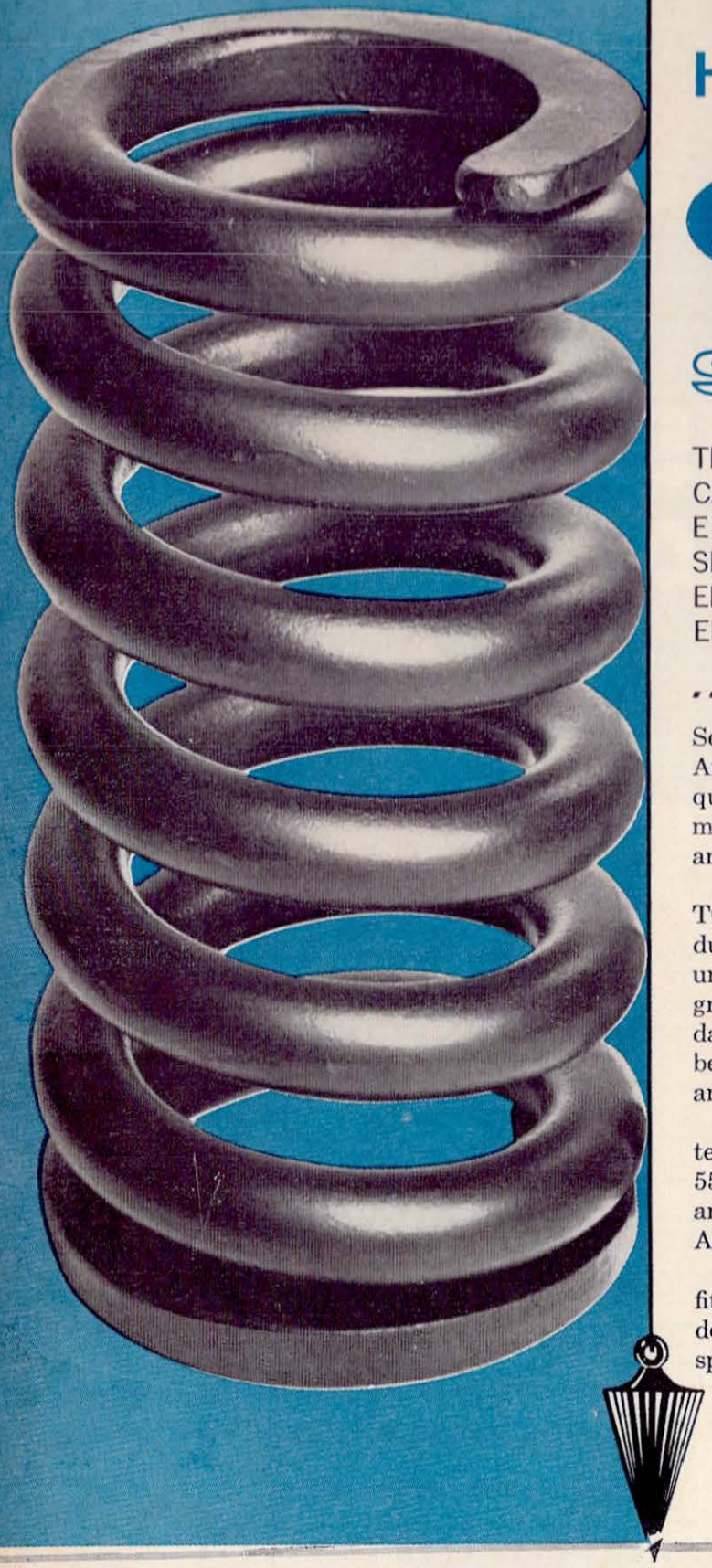

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RAILWAY AGE February 14, 1966 • Vol. 160, No. 6

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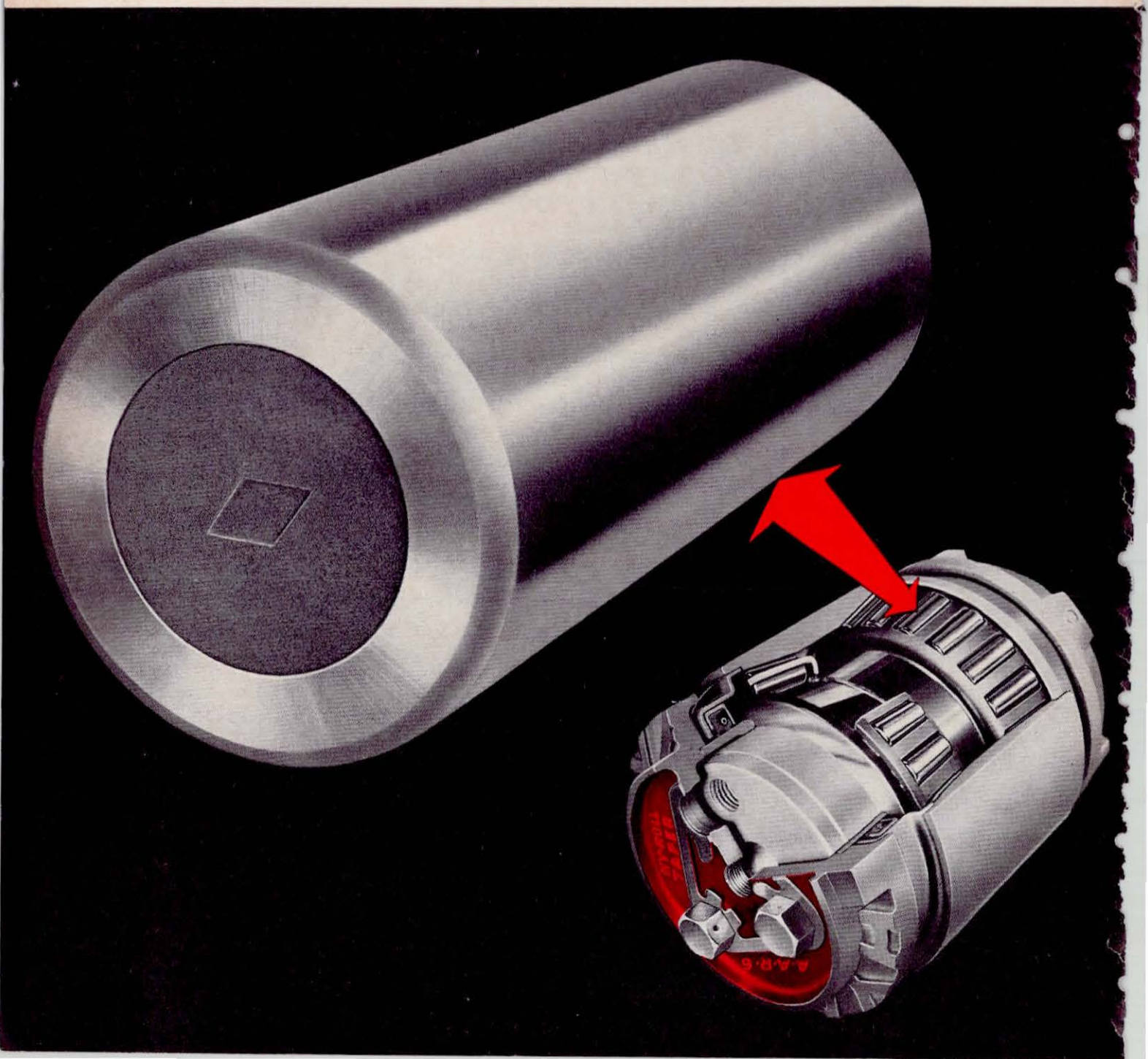

SHORT AND SIGNIFICANT

Rock Island orders new utility diesel

First delivery of Alco's new Century 415 locomotive will be made in June when the Rock Island gets five of the four-axle 1,500-hp utility units. Charles C. Davis, president of Alco's locomotive and engine products division, notes that the locomotive with its raised center cab and dual-control console has been designed to facilitate one-man, two-way operation. It is powered by a new V-8 version of Alco's 251 engine. A demonstrator will be available in April for in-service testing by railroads.

●

P&LE gets first of 22 new GE U28Bs

Delivery of the first General Electric 2,800-horsepower locomotive to the Pittsburgh & Lake Erie was formally accepted Feb. 4 at GE's Erie, Pa. plant by Curtis D. Buford, P&LE's president. Buford said the 22 locomotives in the order "will be sufficient to handle all P&LE road freight operations." Features of the locomotive include placing of all major air-brake components on one removable panel and special wiring of the locomotive that permits locomotive operation to be checked completely by a computerized electronic analyzer.

●

Frisco operations: It's a 'team system'

Operations are on an all-in-one basis now on Frisco, with CTC and the train dispatchers, diesel dispatchers, car distributors and quality-control personnel working on a round-the-clock schedule out of the same headquarters in Springfield, Mo. Centralization of all these operations, the road says, "makes for better coordination in movement for the entire system, since immediate access to all the facts involved in movement of trains from one division to another permits instant decisions which result in more efficient over-all service." Prior to the consolidation, Frisco had dispatching operations at eight points.

●

BRT plans a seminar

The third in a series of conferences sponsored by the Brotherhood of Railroad Trainmen is now scheduled for March 4-6 at the University of Chicago—on the topic of urban and interurban mass transportation. Participants will include representatives of the transportation and transportation-supply industry, government officers and representatives of several colleges and universities. First two conferences in the BRT series involved discussions of transportation problems generally and of new departures in management-labor relations.

●

Marsh reserves opinion on federal transport dept.

Santa Fe President Ernest S. Marsh is taking a wait-and-see approach to President Johnson's proposal for creation of a cabinet-level department of transportation. Marsh told the annual dinner of the Chicago Traffic Club that once before, when such a proposal was made, "I thought it might not be too bad, but I had second thoughts. I became concerned with the likelihood that it would mean more government regulation and control in the transpoartation industry at a time when the need was for more reliance on freedom of management." Then, said Santa Fe's President, "when I saw the draft of the bill to implement that proposal, I lost any remaining enthusiasm for the idea that we needed to try something different." And his position on the current proposal: "I'd prefer to withhold final opinion . . . until it takes more definitive form and we can see if it is of a constructive nature or another step in the events leading to greater control."

MONDAY MORNING REPORT

Everything increases—including the demands

With railroad spending for improvements at an all-time high, with spending for ordinary purchases keeping pace, with computer technology spawning new management techniques one after another, industry purchases-and-stores people could stay almost continuously busy just keeping up with the normal flow of things. But the job demands more than this—and, as the chairman of the AAR's Purchases & Stores Division points out, the demands aren't going to let up, as the P&S operation becomes more and more a vital part of the overall management operation.

The P&S man and his job in management

W. H. Rose, chairman of the P&S group and general purchasing agent of Seaboard Air Line, puts it this way: "Over the past several years, purchasing has gained an increasingly important role in management decision-making and the formulation of company policies—earning this recognition and other broadened assignments through, in part, its knowledge of the flow of new materials and processes constantly appearing on the market. In recent years, purchasing has also become a staff function, with professional status, and its duties and assignments become more exacting and varied with each passing day. It is, therefore, vitally necessary that purchasing and stores personnel keep pace with changing conditions, realizing that today's methods and procedures may not meet tomorrow's requirements. Needless to say, purchasing's role as a profit contributor to their corporate tills is being recognized more and more by management. To keep abreast of these changing conditions and technological advances, purchasing men must keep in close contact with manufacturers and vendors through their sales representatives. We must recognize our mutual problems and work on the basis that is most advantageous to both buyer and seller."

'A sounding board for the company'

The job of the P&S man in the industry today, however, doesn't end there. In the total operation of a purchases and stores department, Rose points out, many non-related functions must also be performed: "The department itself provides a sounding board for its company, and the corporate image is frequently reflected by the manner in which the affairs of the purchasing and stores department are conducted. The personnel of the P&S department probably come into contact with more business people outside the railroad industry than the personnel of any other department—and they must, therefore, be constantly aware of their public relations and salesmanship responsibilities in their dealings with the business community."

The elements of success

Versatility is a key word. The nature of the responsibility, the P&S division chairman says, "requires that personnel be versatile in all phases of the operation. It's apparent, therefore, that good communications must be maintained within the department, as well as with the user departments. . . . Better interdepartmental coordination requires the cooperation of all department heads and a systemized way of doing business. In this spirit of teamwork, duplication of effort and needless paperwork are avoided, the results are generally more productive and we have more time to spend on the really important functions of our operation."

The job grows—people must grow with it

There's not much doubt that the industry today demands more of all its people—particularly, more knowledge. To an increasing extent, every department has to know more about what every other department is doing. Decisions which once were simple aren't so simple any more. As Rose makes clear, versatility, coordination, cooperation are being emphasized as never before.

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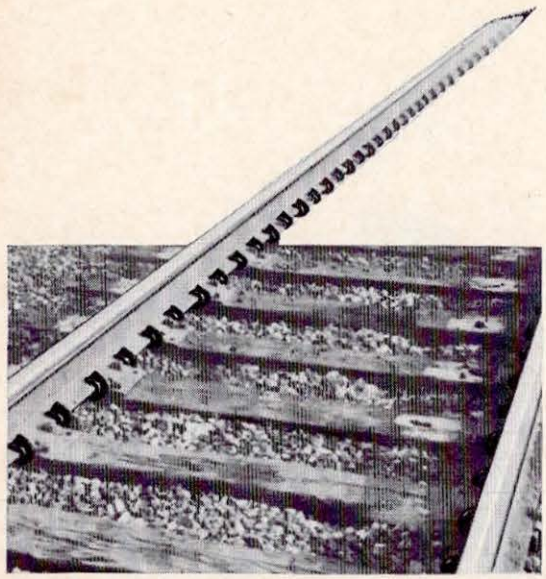

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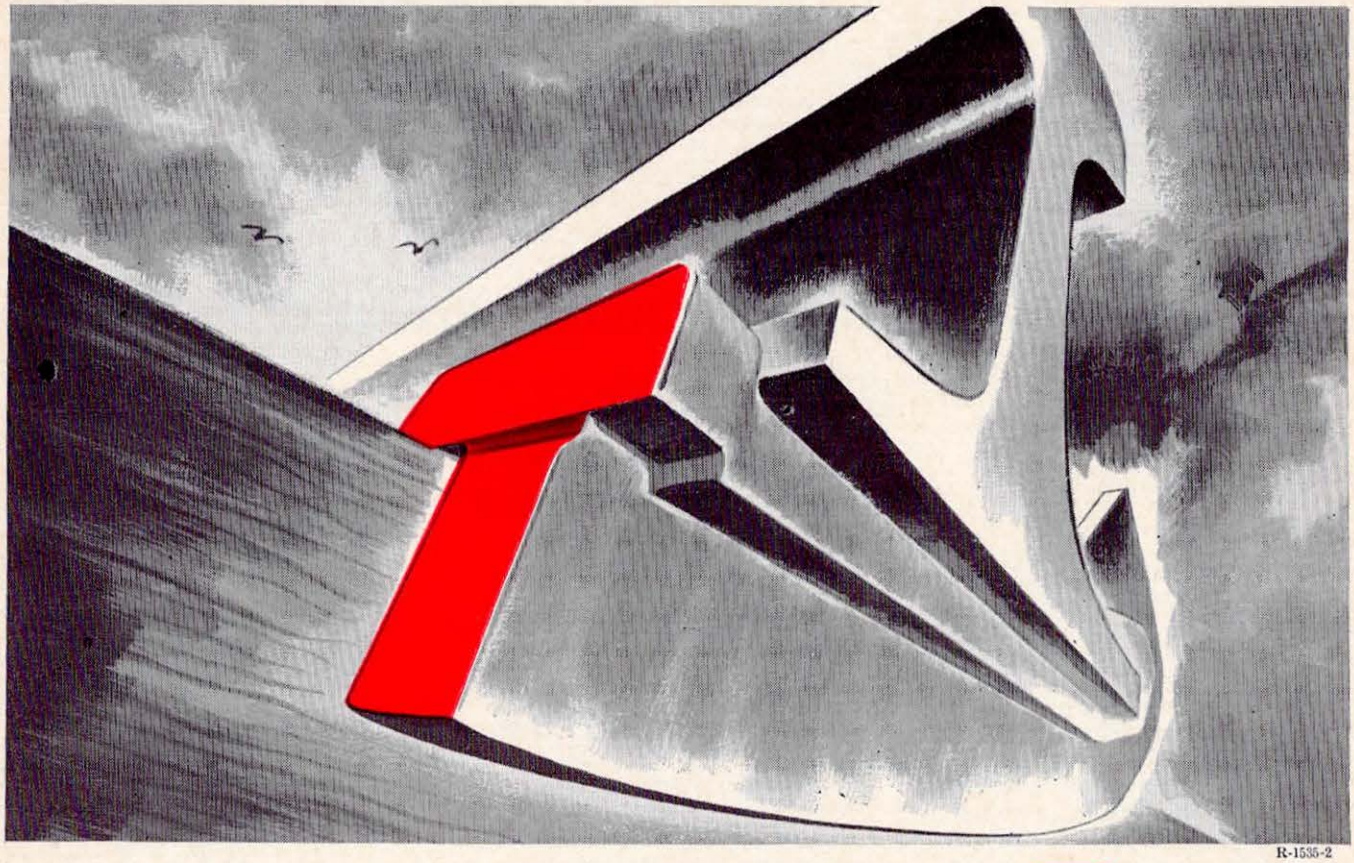

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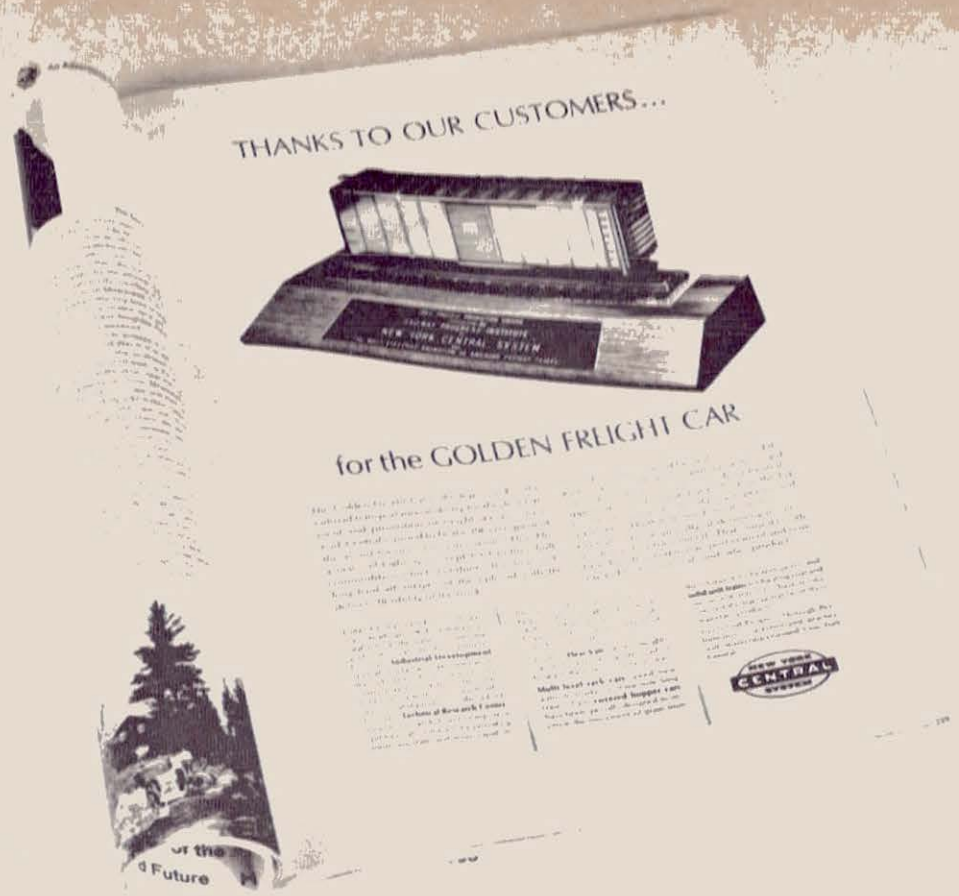
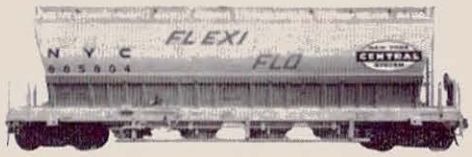


The car behind the Golden Freight Car



An important factor in NYCRR's winning of the prized Golden Car Award is the success of their Flexi-Flo® rail-highway dry bulk distribution service. And the key to Flexi-Flo from the start has been ACF Pressure Differential™ Cars.

With these revolutionary cars, dry bulk commodities can be shipped direct to any terminal or siding. A blower-equipped trailer-truck pulls up. The driver connects two hoses. Then even compacted ladings are pneumatically conveyed into the waiting trailer.

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WEEK AT A GLANCE

Container vs the box car

Roy L. Milbourne, New York Central's director of Flexi-Van sales and service, thinks that "the container will eventually supplant the box car in transporting many commodities by the sheer force of utilization alone." In Montreal last week, he gave members of the Canadian Industrial Traffic League some statistics in support of his thesis.

"On the New York Central," reported Milbourne, "the average monthly gross revenue of a box car is just over $400; that of a Flexi-Van car is pressing $4,000. . .

"The empty mileage ratio of box car equipment in the United States is 43%. Flexi-Van is less than 9%. At the last reckoning, Flexi-Van was contributing 15% to the total net income of the Central, up from 11% a year ago. This is being done with less than one-half of one per cent of the total rail equipment on our railroad."

Milbourne had more testimonials for Flexi-Van: "International borders can now be crossed without customs delay. Export packing is practically eliminated, gross weight, insurance and ad valorem duty reduced, port exposure and pilferage eliminated. No longer are key parts of a consignment lost in transit. Damage is at the lowest level in its history. I have personal knowledge of savings of over $2,000 on a single 40-foot container."

What's ahead? Said Milbourne: "Flexi-Van has barely scratched the surface. Last year on the Central we had an increase of 18.6% in volume and 20% in gross revenue. We expect to continue in this general direction during the years to come."

N&W's $106-million vote of confidence

Norfolk & Western has authorized an additional expenditure of $58 million for new locomotives and freight cars. This brings N&W's total commitments for new equipment to be delivered in 1966 to $106 million. Said President Herman H. Pevler: "This substantial expenditure near the beginning of the year evinces our confidence in the continued growth of the national economy and our intention to take full advantage of that growth for expanded service. We will continue to add equipment as the need arises."

On N&W's new acquisition list:

150 diesel locomotives of six types; 1,000 85-ton coal hoppers; 200 gondolas equipped for transport of coil steel; 200 5,200-cubic-foot-capacity jumbo covered hoppers for grain and other bulk commodities. N&W will also rebuild 1,000 box cars for its own use and 200 for a subsidiary. In addition, a large number of racks and damage-reducing devices will be installed in other cars for haulage of auto parts.

The new locomotives, costing $37 million, will be purchased from EMD, Alco and General Electric—and 35 will be in the 3,600-hp class.

Piggyback continues to set the pace

For TOFC traffic, 1965 was a tough act to follow. Piggyback loadings broke the million car barrier for the first time (the actual figure: 1,031,210, compared with 1964's 890,216) and the perennial question was raised:"How long can the boom last?" Latest indication is that the answer is "indefinitely." In the first month of 1966, while railroad freight traffic as a whole was barely holding its own against last year's high levels, piggyback continued to be another story. TOFC loadings climbed an impressive 13% over the corresponding '65 period (see box). Best guess at this point is that 1966 will see 1,150,000 flat cars loaded with trailers that a few years ago would have been jamming roads.

TOFC: The trend is still up

	1965	1966	% Change
Jan. 29	18,296	19,776	8.1%
Jan. 22	17,457	19,862	13.8%
Jan. 15	17,298	19,116	10.5%
Jan. 8	16,346	18,179	11.2%
Jan. 1	12,827	15,994	24.7%
	82,224	92,927	13.0%

Transit weld proposed for New York . . .

One thing constructive may have come out of the recent crippling transit strike: a speed-up of efforts to consolidate and coordinate New York's tangled transportation set-up. On assuming office, one of Mayor Lindsay's first acts was to appoint Arthur Palmer as head of a new City Transportation Council, comprised of commissioners of traffic, highways, bridge authorities and transit. Linked to this—but somewhat stickier to push through—is the new administration's effort to place surplus bridge tolls of the Triborough Authority at the disposal of the Transit Authority. Triborough chief Robert Moses is bitterly opposed, but the Mayor is preparing to go to Albany for new legislation.

. . . and bigger injections of cash?

The Regional Plan Association wants a re-ordering of priorities on transportation in the New York area—with a lot more money going into rail transit and commuter service. The RPA—comprised of planners from the 22-county area—proposes spending $1.5 billion over the next decade for subway improvements and expansion, $25 million annually for upgrading subway stations, and $80 million annually for modernizing commuter rail service. The RPA policy paper noted that the federal government has ploughed $100 million a year into highways in the region during the last ten years, and only $15 million to aid public transport in the last three years.

GUS WELTY'S LINES ON LABOR

WELTY

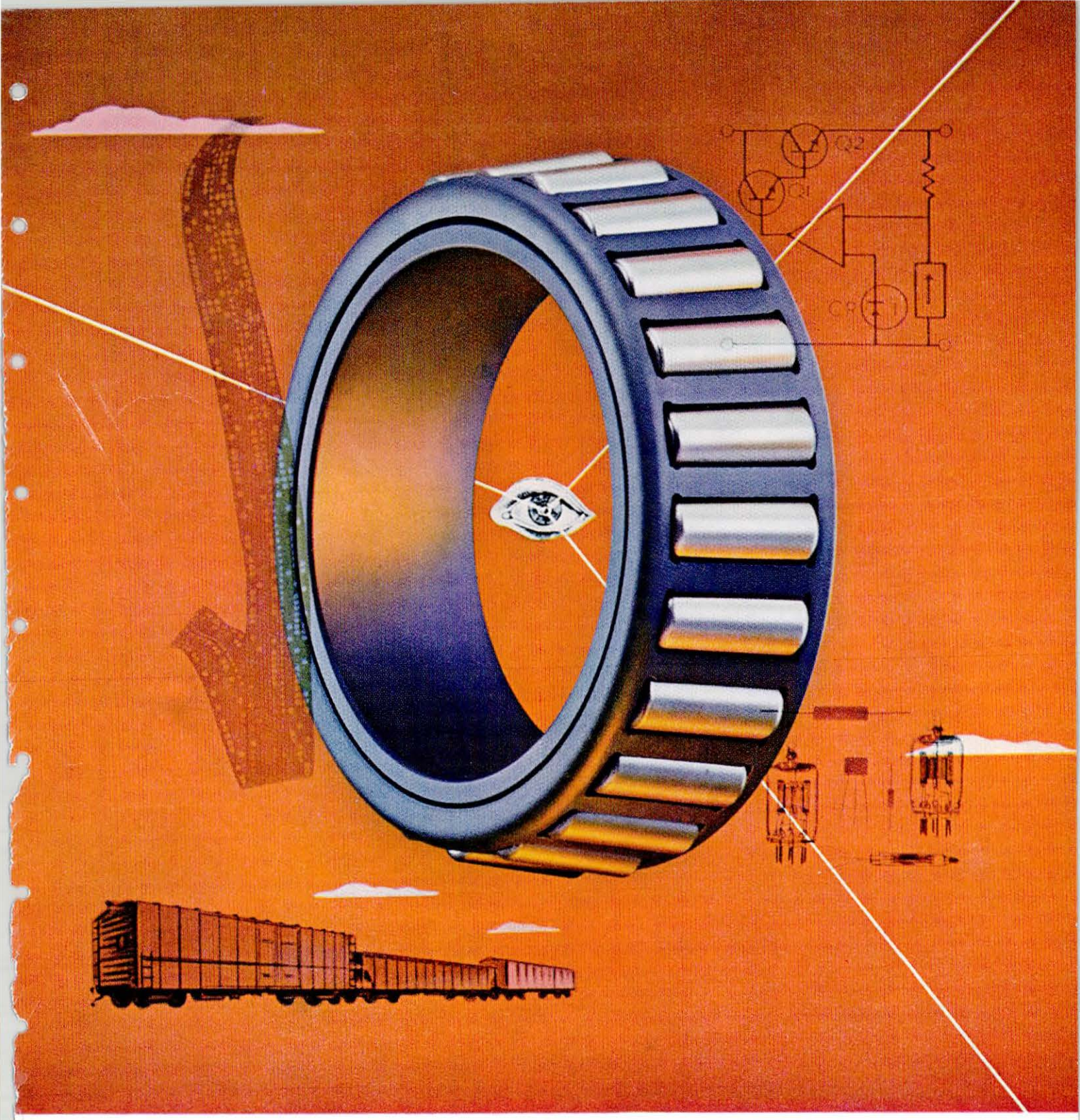
WILL THE OPERATING UNIONS try to use the United States Supreme Court as a wedge to be driven between the railroads and their new-found freedom to reduce the size of train crews? Possibly—but most observers think (a) that the ops won't launch a new push for state crew-consist laws, and (b) that they'd be making a tactical error if they do. The brotherhoods can claim a victory of sorts in a Supreme Court ruling that the law which set up the fireman-off and crew-consist arbitration and the awards that followed were not intended to supersede state crew statutes. But the victory itself is hollowed by repeal, over the past several years, of all but a handful of the state laws. And two key unions among the five operating organizations have indicated a perference for negotiated agreements.

THE UNIONS MIGHT ARGUE that much of the repeal activity in the various states was based on the theory—now rejected by the Supreme Court—that federal law did indeed rule over state law. But most observers would view the argument as less than solid—especially in view of repeal in California, Arizona and North Dakota by voters who were given a choice to make and who probably couldn't have cared less about fine-line interpretations of federal law vs state law.

IN THE SUPREME COURT CASE, the majority opinion drew heavily on House and Senate statements and also cited testimony by various witnesses to back up the position that the arbitration law didn't knock out state statutes. Justice Douglas, the lone dissenter, saw the same record in a different light. With the federal-vs-state issue before it and with the opportunity to add a "saving" amendment to the law, he pointed out, neither house of Congress acted.

THE DOUGLAS DISSENT also called it "inconceivable" that Congress intended to solve only a part of the total problem when it directed the arbitration board to make an award which " 'shall constitute a complete and final disposition of the . . . issues'." The case came to the high court on appeal from U.S. District Court in two Arkansas cases—and Justice Douglas found himself in full agreement with the Arkansas opinion which held that "There is nothing in the act itself or in the history that indicates that the Congress intended to resolve this problem of national magnitude by legislation that would be effective in only some 30 states that do not regulate crew consists by law or administrative regulation."

THE COURT MAJORITY saw it the other way, however, and the majority wins. But, perhaps significantly, while the ops hailed victory, they aren't rushing ahead to repeal the repeals.



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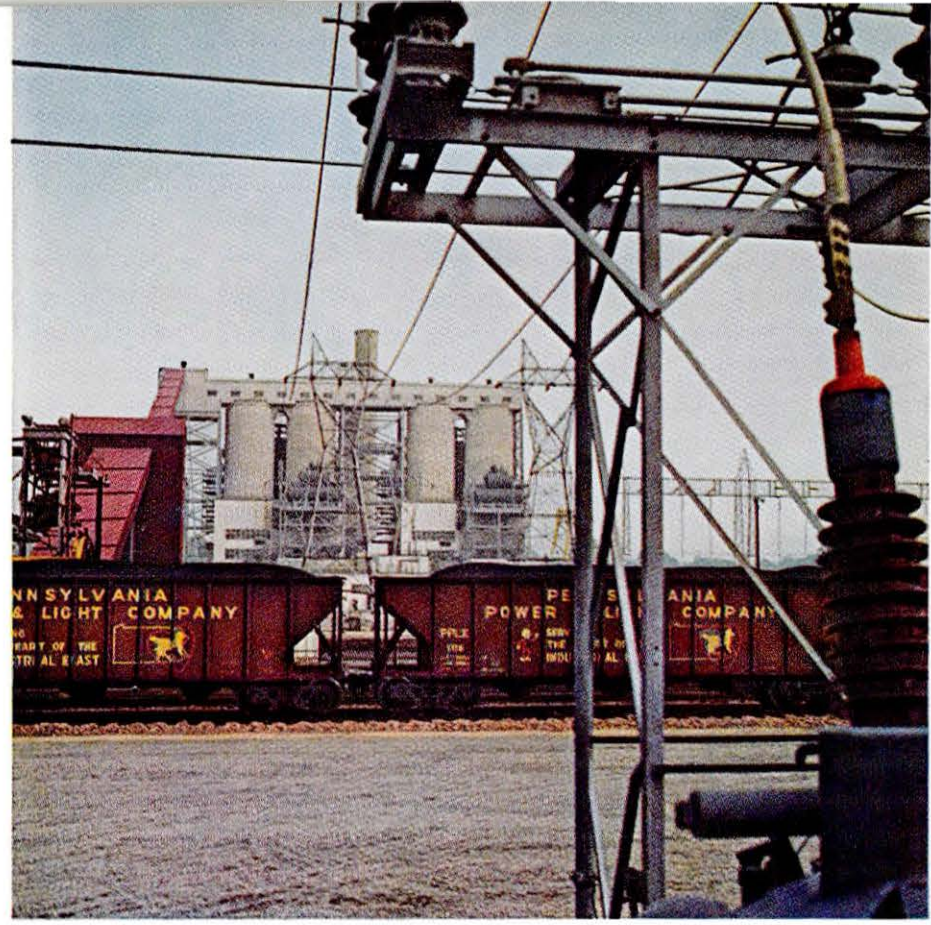

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One giant hopper car?

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Small wonder the railroads call this a "unit train!"

Originally designed to lower the cost of hauling coal, the unit train has proved so successful that many power companies have actually cut their electricity rates for home and industry.

And now other commodities, such as iron ore, grain, and even new automobiles, have also climbed aboard the unit train.

The unit train is typical of the dynamic thinking that is vitalizing our nation's "new" railroads. This and many other bold innovations will assure that our magnificent 214,000-mile railroad system will continue to flourish.

Bethlehem's role in this stirring drama is anything but that of spectator. As both shipper and consignee, we hold the railroads to be vital to our operations. As supplier, we are steadily increasing our research into better ways to roll the rail, forge the wheels, and build the freight cars every progressive railroad needs.

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BETHLEHEM STEEL

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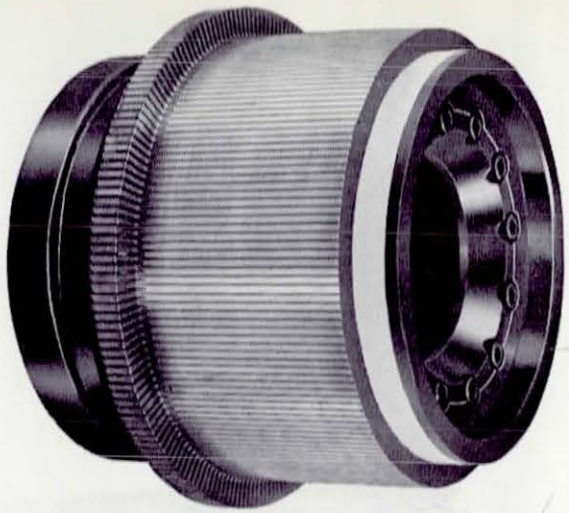

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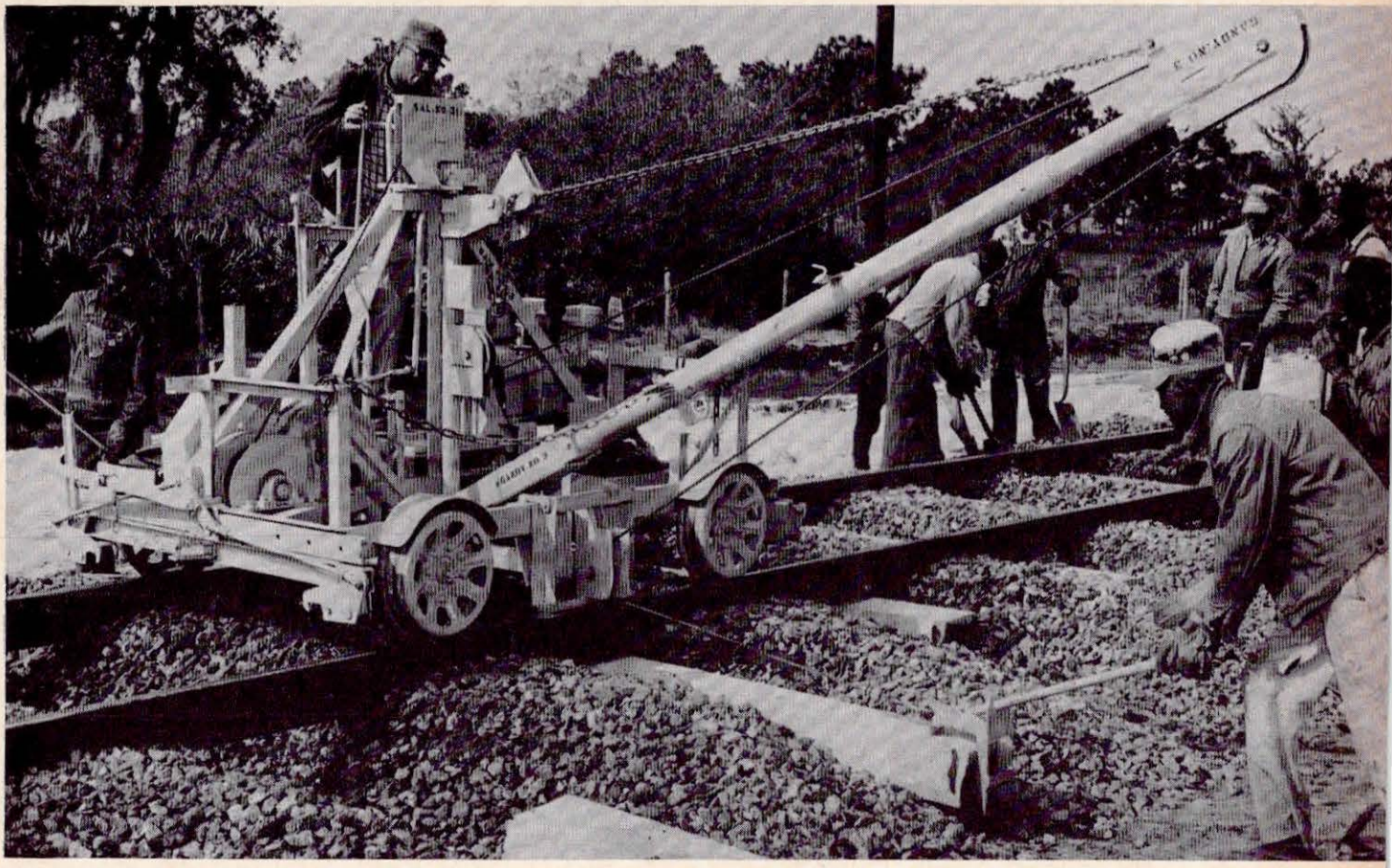
CONCRETE TIES

make the grade on the SAL



INSTALLING TEST TIES: Conventional track-maintenance machines were used when the Seaboard installed the original test section of 600 concrete ties near Tampa, Fla. Here, one of the ties is pulled into position by a Nordberg Gandy.

T. B. Hutcheson
Chief Engineer, SAL

In 1960 the Seaboard made a mainline test installation of 600 ties manufactured of prestressed concrete according to a design developed by the AAR research staff. Each year since then the road has made further installations of concrete ties on a steadily expanding scale. Substantial amounts of additional trackage to be constructed with the ties have been authorized.

On January 24, speaking before one of the largest meetings ever held by the Maintenance of Way Club of Chicago, the Seaboard's chief engineer, T. B. Hutcheson, told the story of his road's experience with concrete ties. The story was detailed and forthright, not only as to the successes experienced but also the failures and the steps taken to correct their causes. The major portion of his remarks follows.

In March of this year the Seaboard will have had six years of experience with the concrete crosstie. On Jan. 1, 1966, it had more than 65,000 concrete ties installed in approximately 32 miles of its main and side tracks.

The Seaboard became interested in the concrete crosstie in May 1959, when G. M. Magee, director of engineering research of the Association of American Railroads, wrote us of the development work done on concrete ties in the Research Center over several prior years. The work had progressed to the point that a field test was desirable.

The Florida Prestressed Concrete Co. which later founded the American Concrete Crosstie Corp., had agreed with the Research Center to make sufficient ties for the test installation. Since the company was located in Tampa, Fla.,

IN PASSING TRACKS: Concrete ties were used in constructing passing-track extensions required in connection with a major line-improvement project extending from Tallahassee, Fla., to Baldwin and thence to Miami.

FOR INDUSTRY TRACKS: Committee also inspected a concrete-tie spur leading to a phosphate plant. This installation required the construction of 28,000 feet of track built with concrete ties.

Mr. Magee asked if the Seaboard would be willing to install a test section of such ties. A similar request was made upon the Atlantic Coast Line. Both roads agreed to install test sections. The Seaboard selected a section of main track near Faulkenberg Road, Tampa. The site was selected because of the nature, volume and speed of the traffic carried; the fact that it was to be relaid with new 115-lb rail in the near future, and its proximity to the facilities of Florida Prestressed, which would allow that company to observe the test. The Seaboard test was installed in March, 1960.

The Atlantic Coast Line test was installed at Four Oaks, N.C., on trackage subject to somewhat more severe weather conditions than those experienced at Tampa.

It is my purpose to discuss briefly the factors that led the Seaboard to expand on its tests of concrete crossties; to go from a test program to a program of use of these ties in main track, passing sidings, industrial tracks and yard construction, where such use was indicated by the nature of the work, by the availability of work forces, and by economic factors; and to make some observations as to the future use of concrete crossties in this country.

All of the ties to be discussed are of the AAR Research Center design, or a modification of that design.

● **Welded rail in test section.** The AAR test installation at Faulkenberg Road was installed on track carrying, at that time, 17,200,000 gross tons of traffic annually, of which 2,000,000 tons were passenger traffic moving at an authorized speed of 80 mph, and 15,200,000 tons were freight traffic moving at an authorized speed of 60 mph. It was laid with new 115-lb RE welded rail just prior to installation of the test, and concurrently with the installation of the test was reballasted with six inches of AREA Size 4 crushed-granite ballast. Since that time traffic has increased to 18,100,000 gross tons annually.

The ties were placed using conventional crosstie-installation equipment, and the track was surfaced with conventional equipment. Appropriate instrumentation was applied by the Research Center to measure stresses imposed upon the ties and track structure by moving trains.

During 1960 and 1961 the installation was closely watched by the AAR Research Center, the American Concrete Crosstie Corp. and the Seaboard. During this period it was our observation, confirmed by the stress measurements and other observations made by the Research Center, that the ties in the test installation were capable of withstanding structurally the loads imposed upon them by moving traffic, and that

the tie functioned satisfactorily in transmitting the traffic loads to the ballast and roadbed, and in holding the line and surface.

The fastening used, which consisted essentially of a 5-inch section of standard AREA tie plate placed on a pad of neoprene, polyethylene or treated plywood, and held in place by a ¾-inch bolt and a compression clip bolted either to a head lock or a wedge-shaped nut inserted under the tie, provided very positive anchorage, but had certain drawbacks. The fastenings were expensive, the strength of the tie was reduced because of the presence of the bolt hole, the wedging action of the wedge nut was undesirable, and the bolts and nuts were exposed to corrosion at the bottom of the tie and difficult to replace. The fastening was practically rigid.

● **Tie, fastening modified.** Because of these undesirable features, the tie has undergone modification with respect to the rail fastening and otherwise. In the period between June 1960, and July 1961, the American Concrete Crosstie Corp. completed the design and construction of an automated plant for the manufacture of concrete ties, and at the same time several changes were made in the design of the tie. The tie plate was eliminated, and the tie cast with a 1:40 inward slope to provide a proper cant for the rail. Four stainless steel insert anchors are cast into the tie for receiving the fastening bolt, and the rail is held in place by a compression clamp fastened with a ¾-inch bolt threaded into the insert. The clamp fits into a groove cast in each side of the rail seat for the purpose of preventing rotation and for holding the gauge. A pad of neoprene or other compressible material is inserted between the rail and its seat.

The original tie tended to develop tension cracks in its upper surface, which detracted from the appearance and was undesirable from the standpoint of weather action and otherwise. The design was changed to modify slightly the prestress pattern and to lower the concrete cover across the center section of the tie. Thus changed, the tie is identified by the manufacturer as the MR-2 tie.

Further work has been done on the fastenings, primarily for the purpose of increasing flexibility and at the same time provide positive anchorage. Much of this work has been done by the tie manufacturer, but rail-anchor manufacturers have also interested themselves in the fastening problem. It is to be expected that additional work will be done in this field.

The AAR test section has, from its original installation, functioned most satisfactorily in holding the line, gauge and surface of the track, and has provided a riding condition superior to that of the adjacent timber track. Maintenance costs have been most reasonable.

● **More tests projected.** After the favorable experience with the AAR test section, the Seaboard in 1961 decided to expand its test installations of concrete ties, using the improved direct-fixation tie. Two projects were selected, one a ballasted-deck concrete bridge over the Little St. Mary's river at Glen St. Mary's, Fla., and the other a two-and-a-half-mile industrial side track to serve a lime rock quarrying operation near Crystal Springs, Fla.

The concrete bridge project was selected to determine the practicality of using concrete ties on such decks, having in mind the high cost of replacing timber ties. The industrial track was selected to gain experience in construction methods with concrete track panels and to arrive at an appropriate spacing for concrete ties on secondary tracks having a maximum speed of not more than 25 mph.

Difficulties were experienced in both of these projects, but much was learned which has proved extremely beneficial in future construction.

A major concern in the installation of the ties on the bridge deck was the problem of placing ballast without damage to the ties due to center loading by traffic prior to completion of surfacing. A decision was reached to place 1-inch by 6-inch timber runners under the tie at each rail seat so as to give support during ballast unloading. The track was successively lifted two inches, and then an additional two inches, all under traffic. We found that with this method and a light ballast cover, large tension cracks developed under traffic. From this experience we concluded that before concrete ties were placed on a concrete ballasted-deck bridge, at least four inches of ballast should already be in place, and the track immediately raised a total of six inches.

In 1964 the stretch of track on which this bridge is located was relaid with 115-lb welded rail. At that time it was decided to replace the entire lot of concrete ties with ties of the MR-2 design, and to re-use the salvageable ties in side-track construction, where their imperfections would not be as important. Ninety-eight of the 163 ties originally placed on the bridge were salvaged for such use. The new installation is now giving satisfactory service.

● **Lessons from quarry-track job.** The two-and-a-half mile quarry track constructed by the panel method was

'BRIGHT FUTURE' IS SEEN FOR THE CONCRETE TIE

I have been asked to comment on the future for the concrete cross-tie in the United States.

Since the original installation of the AAR test, there has been a continuous improvement in the product, both as to design and as to fabrication. Additionally, there has been constant work to improve the fittings. The fittings presently available and in use on the Seaboard are performing adequately and give every indication that they will, if properly treated with metal preservatives, have a long service life. The concrete tie presently available is, in my opinion, an acceptable product.

The development of the portable tie manufacturing plant has made it possible for the manufacturer to furnish ties in any area where there is sufficient demand to warrant setting up of such a plant. This ready availability is an important factor when the long lead time to procure, season and treat wood ties is considered.

There has been a steady increase in the cost of timer in the woods, especially with such species favored in the Southeast as highland oaks and black gum. Additionally, there is much competition for these woods for flooring, furniture, veneers, etc., uses which command a higher price. Woodlot owners resist selective cutting in hardwood forests. These factors result in the necessity to purchase ties cut from the less desirable mixed hardwoods. It is reasonable to expect that this competition for desirable stumpage will increase.

In view of the satisfactory experience with the concrete cross-tie, both from a cost-competitive standpoint and from the standpoint of maintaining line, surface and gauge, I am of the opinion that the future for concrete cross-ties in new construction is bright, and their use will grow.

Maintenance replacement represents a different problem, upon which little work has yet been done. Of first importance is to determine the manner in which replacements can most satisfactorily be made. The Seaboard has recently made a number of test installations using different spacings and numbers of concrete ties in the joint area. The major problem, of course, in this field is the remaining tie service life in any one panel of track, assuming a consistent policy of proper cycle maintenance.

The Seaboard is not yet ready to report on these test installations.

—T. B. Hutcheson, Chief Engineer, SAL

also a project on which much was learned.

The tie manufacturer agreed to construct panels of ties in his plant with rail furnished by the Seaboard, and deliver the finished panels to the railroad loaded on flat cars. There were several curves on the line, including a wye track.

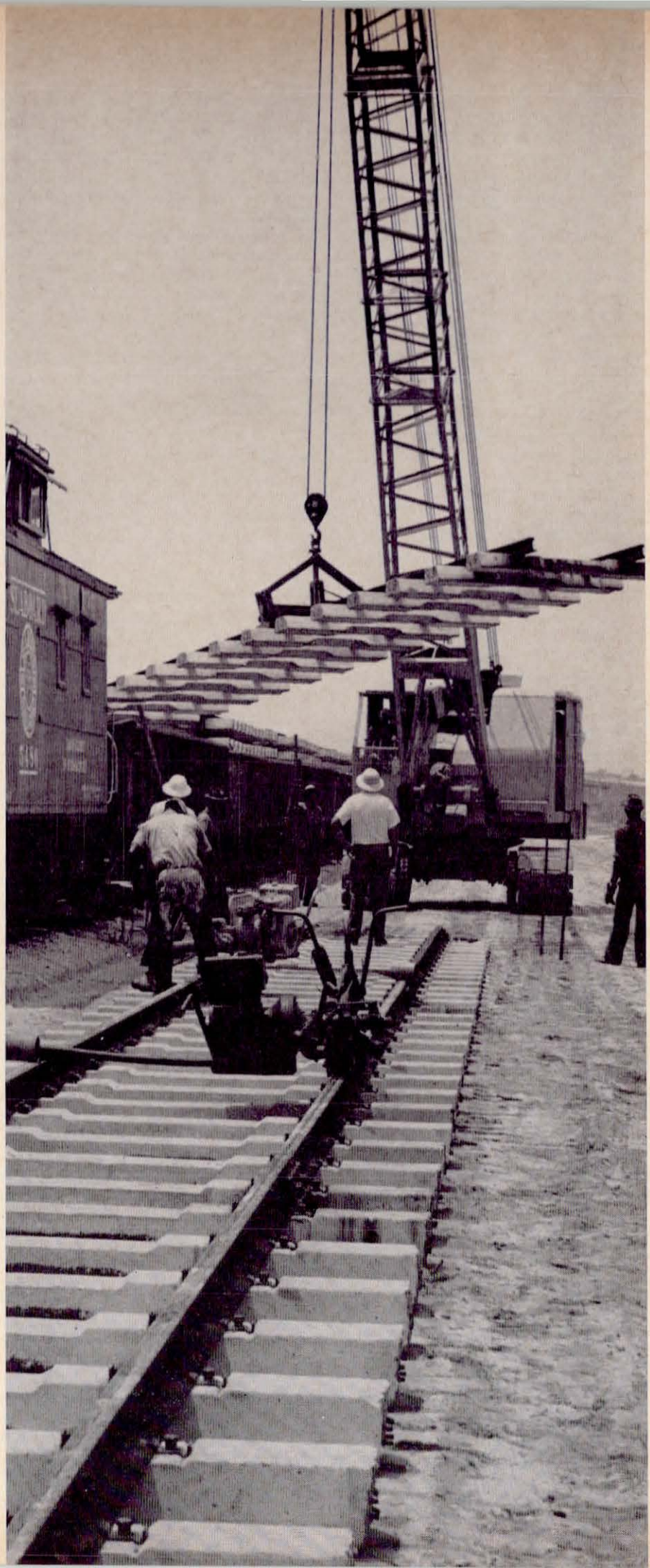
The panels, with ties spaced on 33-inch centers, were loaded six high on flat cars and tied down for shipment. They rested on skid rails fastened to the flat car, and the stacks could be pulled by the dragline from rear cars to the lead car for unloading so that switching would be unnecessary after leaving the main track. No major problems were encountered in the construction, and the track was constructed for a cost of approximately $8.54 per foot, exclusive of grading.

We found, however, that, without going to some expense in constructing cars with special tie-down devices, panels should not be moved over long distances with the arrangements used for the quarry track, and panels used in subsequent construction have been loaded in 40-foot gondola cars. We found that we could unload approximately one-half mile of panel track per day, leaving it in shape for the unloading of ballast and final surfacing, and that a force of a foreman, seven men and 1½-cubic yard dragline was sufficient to handle the panels from a work train.

Unfortunately, the quarry failed to develop commercially, and in 1965 approximately 10,500 feet of this track were picked up and moved by low-boy trailers to a nearby chemical plant. The cost of moving to the new grade was $1.19 per foot.

• **In 1962: More tests:** During early 1962, impressed with the performance of the AAR test section and concerned about the increasing difficulty in obtaining a proper quantity and quality of wood crossties, principally because of increasing market competition and cost for timber ties, the Seaboard undertook to expand its test installations. In doing so, locations were selected where tie replacements were more than usually expensive, or where service conditions were more than usually severe.

The first decision was to install concrete ties on concrete ballasted-deck bridges included in the 1962 program. Ten bridges were selected. A total of 754 ties, spaced 30 inches on centers,



PANELS GO DOWN FAST: Seaboard found that, with a gang of seven men plus the foreman, it can lay approximately one-half mile of panel track a day. A crawler crane unloads the panels from 40-foot gondolas.

were used on the bridges and approaches.

Installations of concrete ties were also made at three very heavily traveled highway crossings. These installations covered 1,265 feet of track and a total of 506 ties were used, again with a 30-inch spacing.

An installation was also made on a station track at the Raleigh, N. C., passenger station, which at that time required heavy crosstie replacements. The timber ties were removed, and 460 concrete ties were installed on 30-inch centers on 1,150 feet of track, a portion of which was on a 1-degree curve. This track is between station landings, making for high replacement costs.

The fourth installation selected was an industrial track at Yeoman, Fla., where both the Seaboard portion and the industrial ownership of the track were constructed with concrete ties. The Seaboard portion of the track is on a 20-degee curve, and the track was constructed by the panel method, with ties on 33-inch centers for the curve and 36-inch centers on the tangent.

On Jan. 1, 1963, the Seaboard had 3,352 concrete crossties in 1.73 miles of its main and side tracks, all in test installations.

When 1963 construction and maintenance programs were set up, it was decided to defer placing of concrete ties on bridge decks until there had been some opportunity to observe those installed in 1962.

● **A major undertaking . . .** In 1963 Seaboard reached a decision to make a major expansion of its track, signal, yard and related facilities on the route from Tallahassee, Fla., through Baldwin, Fla., to Miami, Fla. This expansion consisted of a completely new installation of CTC from Tallahassee to Baldwin, including extension of passing tracks, then having a capacity of about 65 cars, to 160 cars. Between Baldwin and Wildwood, passing tracks were to be increased to a capacity of 200 cars. Additions and extensions to passing tracks and the signal system were to be made between Wildwood and Miami, so as to properly space passing tracks and have a uniform length of 150 cars. Yard expansions were planned at Wildwood yard and at Hialeah yard in metropolitan Miami. The project included two main-line relocations, one at Dania, Fla., and the other a curve reduction at Waldo, Fla.

Tests were satisfactory

About August 1963, as this project went to the construction stage, we took occasion to examine the Seaboard's experience with concrete crossties to date. We found that the 1962 test installations were all functioning in a very satisfactory manner.

The experience with the quarry-track construction indicated that concrete track in panels could be built cost-competitively with woodtie construction.

Main-line installations, using new 115-lb or 132-lb welded rail and new metal fastenings with wood ties on 21-inch centers, are more expensive than similar concrete construction on 30-inch centers.

● **. . . And a major decision.** The arrangement involving the purchase of concrete track in panels, used at the quarry spur, greatly reduced the amount of extra labor which the railroad needed to employ if timber construction were used. It was therefore decided to use concrete panels on much of the passing-track extension and yard work, and to use concrete ties on the main-line relocations.

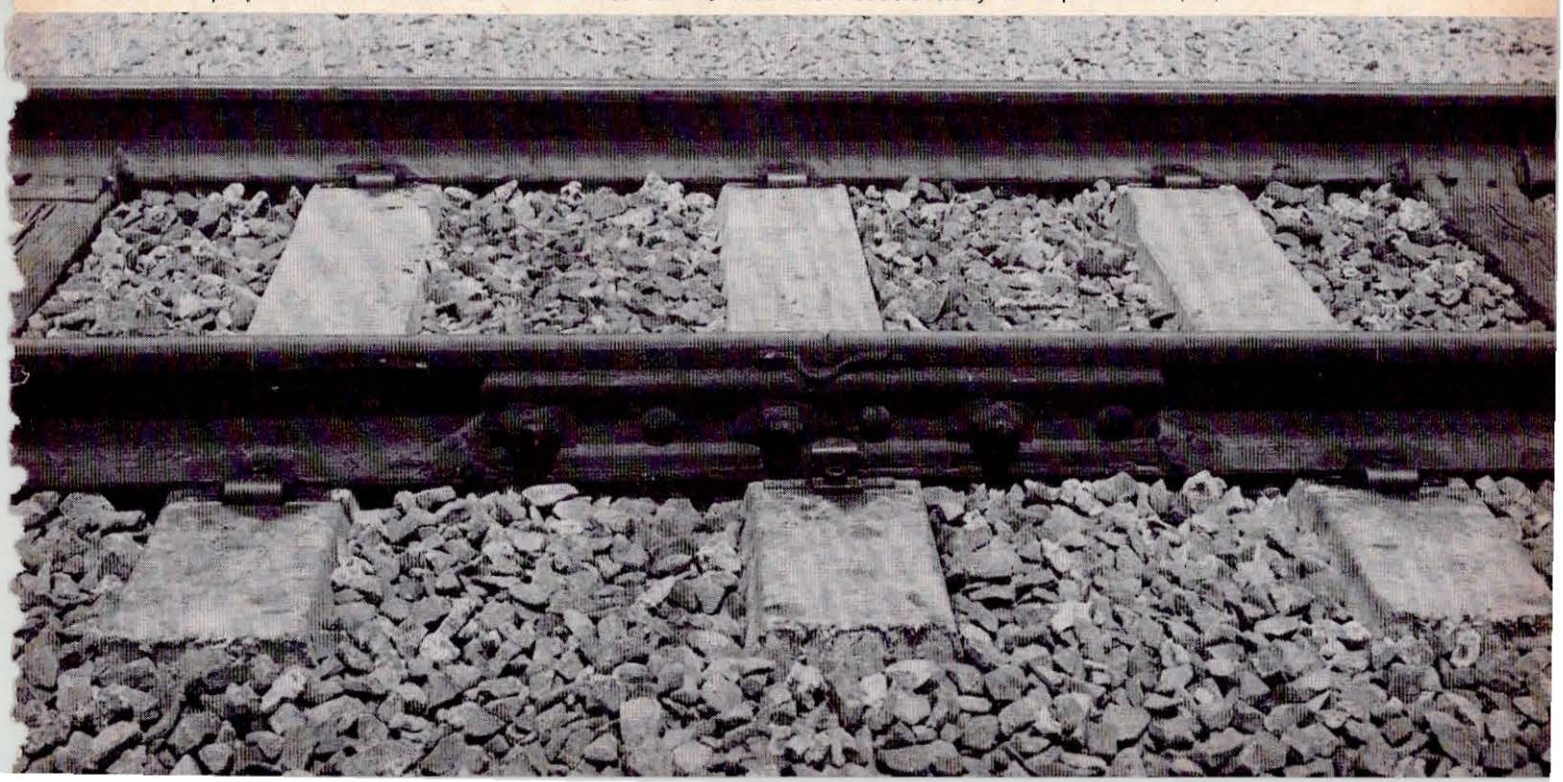
During 1963, 3.55 miles of track were constructed on this project and on the two roadcrossings, requiring a total of 6,956 ties.

In late 1963 the Seaboard developed a standard plan for prefabricating 39-foot track panels. This plan provides for four different tie spacings. The 15-tie panel, with 14 equal spacings at 31 5/16 inches, is used for passing tracks and running tracks operated at a speed of 25 mph. The 14-tie panel, with 13 equal spaces of 33 3/4 inches, is used for passing tracks and other tracks operated at 10 mph. The 13-tie panel, with 12 equal spaces of 39 9/16 inches, is used for storage tracks and body tracks in yards where speeds of under 10 mph are to be expected. A 12-tie panel, with 11 equal spaces of 39 7/8 inches, is used for short warehouse spur tracks. Each of these spacings provides a uniform 29 1/2-inch spacing at the joint. Our experience to date with these tie spaces indicates that they are satisfactory for maintaining surface, line and gauge on tracks operated at the speeds listed.

Work on the Tallahassee-Miami project continued through 1964, and in that year 3.7 miles of track, using 7,280 concrete ties, were placed in service.

● **Enter the portable plant.** In March 1964 a significant event occurred which has allowed the Seaboard to expand on its use of concrete ties. The tie manu-

TESTING AT JOINTS: Test installations have been made of concrete ties at joints in track otherwise laid with wood ties. The purpose is to determine how such ties can be used most satisfactorily for replacement purposes.



facturer developed and placed into operation a portable plant which could be set up within a short period of time to manufacture ties anywhere there is sufficient demand. The first of these plants was located at Atlanta, Ga. This allowed the use of concrete ties in the expanding industrial construction in that area, and four industrial tracks, using ties in panels from that plant, were constructed in 1964. Subsequently, portable plants have been placed in the Southeast at Monroe, N. C., and Chocowinity, N. C. The Atlanta plant was later moved to Jacksonville, Fla.

By early 1965 the Seaboard had sufficient experience with concrete crossties to know that they could be used in many situations competitively with wood ties. Also, in 1965 the volume of major industrial construction in the Seaboard's territory stepped up considerably, and the opportunity was afforded to go into several large projects using these ties, either in panels or under welded rail.

Typical of these projects is a mainline relocation and a main lead track to a paper mill under construction by the Alabama Kraft Corp. at Mahrt, Ala.; a major phosphate chemical plant, owned by Central Phosphates, Inc., at Crystal Springs, Fla.; a new interchange track with the P&N Railway at Mt. Holly, N. C.; a new passing track required in connection with a unit coal train movement; and two large phosphate operations near Brewster, Fla.

Also in 1965, based on experience with the 1962 bridge installations, we again began placing concrete ties on new concrete bridge decks.

During 1965, 23.2 miles of concrete track were constructed, using 47,420 ties. A total of 10.9 miles of track, requring 20,482 ties, is presently authorized for construction.

When these last-mentioned projects are complete, the Seaboard will have constructed 47.3 miles of concrete track, and have in its main and side tracks approximately 94,000 concrete crossties.

[At this point Hutcheson gave a detailed report on the concrete ties that have failed in service. Of the 600 ties installed in the original test section, 72 have been removed because of failure, he said, but about 50 of these came out because of damage incurred directly or indirectly when a broken locomotive wheel passed over the test section. Of the 3,542 ties installed in 1962, twelve have failed, all on or adjacent to concrete bridges. Most of these failures were attributed to "poor manufacture." No service failures have occurred in ties installed since 1962, said Hutcheson. ■

COMPLETED STRUCTURE: Incorporating seven 25-foot 6-inch prestressed-concrete spans

How hollow bridge beams can pay off

Advantages of hollow beams are explained by Rock Island bridge engineer. RI built first bridge incorporating new feature.

The prestressed-concrete trestle is one of the newer forms of bridge design being used on the railroads. And like nearly everything else new on the railroads it is being constantly improved. In the latest advance in design the diaphragms formerly used at the ends and intermediate points in the box beams, which were considered necessary for structural strength, have been removed.

The resulting completely hollow beams have a number of advantages, explains J. R. Williams, engineer of bridges of the Rock Island. A bridge incorporating the new feature had recently been constructed on his road. Beams made without diaphragms permit the use of more efficient construction methods, such as collapsible forms or construction by extrusion with a traveling mandrel, he said. Also, the unobstructed hollow core permits a close examination of the void, which couldn't be done when interior and end diaphragms were used, he explained.

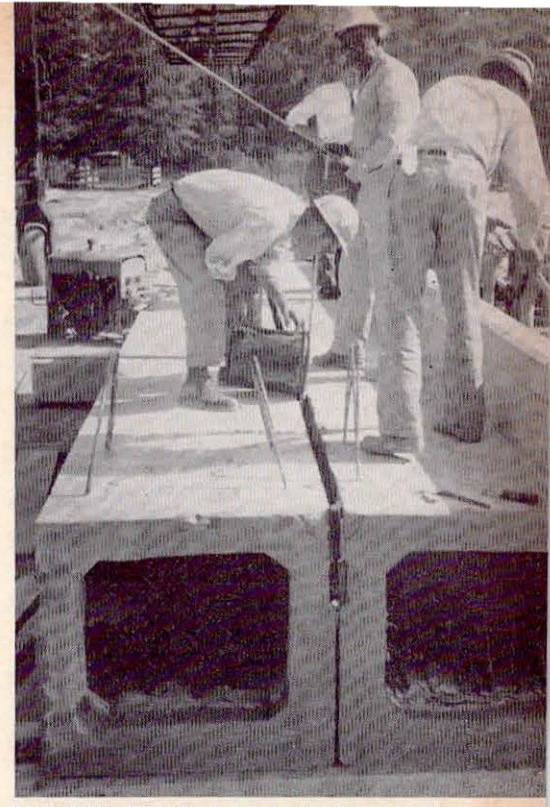
"This design fits right in with the work of casting plants all over the country," said Williams. "If enough roads start using the design, the commercial yards could cast stock beams in their off-season and stock-pile them. Railroads could then buy the beams 'off the shelf' and effect considerable savings compared with individually designed bridges."

● **Rock Island's pioneer.** The first bridge to be built incorporating the new feature is the Rock Island's Bridge No. 6175. This structure carries a single track of the Rock Island over Big Fossil creek between Dallas, Tex., and Ft. Worth. The bridge also is used by trains of the Frisco and the Ft. Worth & Denver.

The existing bridge included a 55-foot ballasted-deck plate-girder span flanked on each side by a six-span ballasted-deck timber trestle. When the U.S. Corps of Engineers undertook a project to widen the channel of Big Fossil creek to a 100-foot bottom with 3:1 slopes in connection with a local flood-control project, Rock Island engineers decided to replace and lengthen the southerly approach with a prestressed-concrete trestle incorporating voided box beams and consisting of seven 25-foot 6-inch spans.

The new design is the result of joint efforts by Committee 8—Masonry, of the American Railway Engineering As-

in the south approach of Rock Island's Bridge No. 6175, increased its length.



FORMING PAIRS: An interior beam and a facia beam (with ballast retainer) are bonded together with a sand-epoxy grout to facilitate erection. Two pairs are set side by side at the bridge site and are bonded to make a complete span.

sociation, the Portland Cement Association; the Prestressed Concrete Institute; and the AAR Research Center. Committee 8, with the cooperation ot PCI and PCA, developed the design of the completely hollow box beams.

● **Laboratory tested.** "This bridge at Ft. Worth is no fly-by-night experiment," points out Williams. "The concept had been fully tested before we decided to put it to actual use." He goes on to explain that several full-size beams incorporating the new feature were tested at the AAR Research Center before the design was accepted. Beams of both conventional and lightweight concrete aggregates were tested under both static and repeated-load tests. It was found that the beams supported 1.7 times their design loading for 2 million loading cycles, which was considered the life of the bridge.

The through-voided prestressed beams for the Rock Island bridge are 3 feet wide and 2 feet 9 inches deep, and four of them are used to form a span. Each beam has 13 prestressing strands along the bottom and 3 more on each side. Although the AREA design for beam lengths is 28 feet, the Rock Island elected to use lengths of 25 feet 6 inches to fit ground conditions. Cast-in-place concrete piles, caps and collars were used.

● **How beams were made.** The beams were cast by Gifford-Hill & Co., at their Shreveport, La., plant. The casting bed was about 300 feet long and the 19 prestressing strands were stretched for the entire length of the bed with a stress of 25,200 psi on each strand. Spans of the desired length were formed by inserting bulkheads at the proper locations in the bed.

The interior forms for shaping the hollow core were of bitumen-impregnated pressed paper board. For this purpose a material of honeycomb construction was used to produce sufficient strength to withstand the weight and hydrostatic pressure of the concrete.

After the conventional reinforcing bars had been placed, air-entrained concrete was poured and vibrated in the forms. When the concrete had cured to 4,000 psi compressive strength, the prestressing strands were cut in accordance with a predetermined pattern so as not to distort the finished beam. Curbs were then cast on the facia beams and the core forms were removed to permit inspection of the interior. Removal of these forms was accomplished simply by driving a reinforcing rod through the length of the core, attaching a steel plate at one end and pulling the plate, along with the core, out of the beam.

The fabricator set the beams on level supports and bonded them together in pairs, using an interior beam and a facia beam to a pair. The bonding was done by priming the sides to be bonded for their full depth and length with a brush coat of epoxy formulation, then bringing the beams together and pouring a sand-epoxy group into the keyway. The beam pairs were shipped on flat cars to the bridge site.

● **Piles cast in place.** Because the piles were to be founded 65 feet below base of rail in a shale stratum, it was decided to bore holes and use cast-in-place reinforced-concrete piles. Three-pile bents were constructed, the two outer piles being bored on a 1:12 batter. Sonotube forms, 2 feet in diameter, were used for the piles and were sunk to the depth of the proposed excavated ground line. Below that the drilled holes served to contain the concrete. The holes penetrated about 6 feet below a shale line and the bottom on each was flared out to form a bell 4 feet in diameter. The bents have reinforced-concrete caps and, where necessary, collars and struts.

As the double beams arrived at the bridge site, they were unloaded onto level supports. For the most part the supports consisted of blocking placed on the roadbed opposite the point of installation. However, for three of the spans it was necessary to drive falsework bents for this purpose.

At the bridge site the double spans were bonded together in pairs to form complete spans. The same bonding procedure and materials used at the casting plant for making the double beams were used at the bridge site. After each span had been assembled, it was waterproofed and neoprene bearing pads, ½ inch thick, were epoxy-bonded to the underside of each box beam at the ends.

Two 40/50-ton locomotive cranes set the spans in place. The spans were erected in three days under traffic without delay to trains. The construction of the concrete bents was carried out under contract by Austin Bridge Co., Austin, Tex. All other work at the bridge site was by railroad forces. ■

What prestressed concrete can do

The potentialities of prestressed concrete railroad bridges are 'truly unlimited,' say two of the industry's top engineers.

By G. M. Magee and E. J. Ruble*

We hear a great deal about prestressed concrete today and many of us think it is something entirely new. However, the general idea of "prestressing" has been employed for many years in a great number of human activities, possibly the most common being that of making the wooden wheels for our wagons and carriages of the past. The blacksmith was prestressing when he placed a hot steel hoop around a wooden wheel and then permitted the hoop to cool and shrink.

A series of books or blocks can be used to form a prestressed member capable of carrying a load if we hold the books together with our hands so that the compressive stress on the lower fibers of the books due to the pressure of our hands is as great or greater than the tension stress resulting from the load to be carried. If we do not press on the books or blocks with our hands, the books are unstable and will not carry the imposed loads as shown in Fig. 1(A).

The invention of reinforced concrete is usually credited to Joseph Monier, a Parisian gardener, who in 1861 constructed tubs and tanks of concrete surrounding a skeleton of wire.

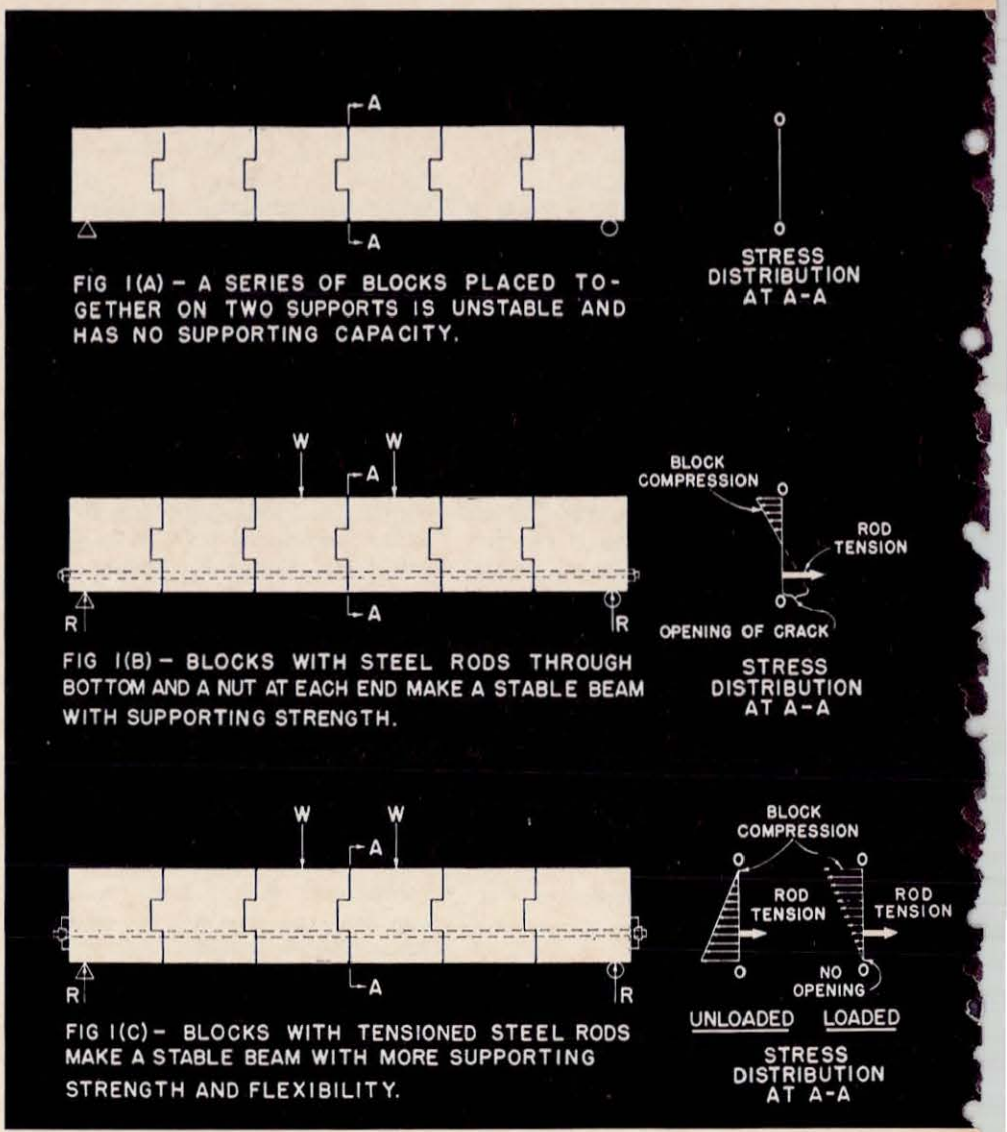
● **How materials work together.** Plain concrete is subject to great variations in its physical properties as a result of the variations in the character and proportions of its ingredients and in its preparation. Possibly the greatest variation is in its compressive and tensile strength. Concrete is characterized by high compressive strength and low tensile strength, the tensile strength being about 10% of the compressive strength. Steel is a material especially well suited to resist tensile stresses and thus, a combination of concrete and steel, commonly called reinforced concrete, constitutes a form of construction possessing to a large degree the advantages of both materials.

The principal disadvantage of using steel rods to carry the tension stresses is that the strain or elongation of the steel rods at working stresses exceeds the strength of the concrete in tension. Consequently, the concrete will have a series of transverse cracks on the tension side as shown on Fig. 1(B).

The obvious solution to the cracking of the concrete on the tension side is to introduce forces on the ends of the structural member, such as that previously mentioned on the books, to produce a compressive stress in the concrete which will be as great or greater than the tension stress produced by the load [Fig. 1 (C)].

If the beams shown in the diagram are made of solid concrete instead of a series of blocks, the stress distribution in 1A will be different because the beam will have a supporting strength corresponding to the tensile strength of the concrete, the bottom of the beam being in tension and the top in compression of an equal amount. However, the supporting strength of this plain concrete beam will be only about one-tenth that of a prestressed beam.

The stress distribution for a solid concrete reinforced beam will be exactly the same as for the one made of blocks shown in 1B, but its supporting strength is smaller than that of a prestressed beam of the same size under usual design practices. Under load, cracks would form in the concrete on the bottom of the beam, whereas the blocks would merely separate.



WHAT IS PRESTRESSED CONCRETE? In these drawings the authors show how a series of blocks, lacking supporting capacity by themselves, make a stable beam when rods are extended through them and are given even greater strength and flexibility when tension is applied to the rods.

*Magee is director of engineering research of the Engineering Division, AAR, and Ruble is executive research engineer.

DESIGNERS OF CONCRETE TIE

Magee and Ruble are the co-designers of the prestressed-concrete tie that the Seaboard has been installing in its tracks since 1960, as described in the article, beginning on page 17, by T. B. Hutcheson, chief engineer of that road. As manufactured by the American Concrete Crosstie Corp. the tie is identified by the letters MR, the "M" being for Magee and the "R" for Ruble. This article was written especially for Railway Age with the objective of promoting a better understanding of prestressed concrete and its qualifications as a material for crossties and in the construction of railroad bridges.

The stress distribution in a solid concrete prestressed beam and the supporting strength will be the same as that for one made of prestressed blocks as shown in 1C. Since both the reinforced concrete and the prestressed concrete beams have the same amount of concrete as the plain concrete beams, the cost for the additional strength is only that for the reinforcement or the prestressing.

The idea of prestressing the concrete is about as old as that of using steel rods to overcome the natural weakness of concrete in tension.

The natural question then is why was not prestressing used years ago? The principal reason is that prestressing of concrete depends on steels having high yield points and such steels were not available until about 1927. Why are the high yield points required? The modulus of elasticity of concrete, or unit deformation under a load, is about one-third that of steel. In other words, the concrete will strain or elongate about three times more than steel under the same load. Then, in order to introduce a compression strain in the bottom of the structural member equal to the tension strain produced by the load, the strain or elongation in the steel has to be equal to the strain in the concrete and this requires a steel having a higher yield point than those available previous to about 1927. As an example, the reinforcing steels previous to 1927 had yield points of approximately 30,000 psi with an ultimate of about 60,000 psi, while present-day prestressing strands have a yield point of 212,000 psi with ultimate strengths of approximately 250,000 psi.

● **Two types of prestressing.** The prestressing of concrete can be accomplished by either the post-tensioning method or the pretensioning method. The post-tensioning method is very similar to placing a pressure on the books previously described. In this method, the concrete is cast with longitudinal holes extending through the member. After the concrete has hardened, high-strength rods or rope are placed through the holes with one end of the rod or rope anchored against the concrete. The concrete is then compressed by jacking against the other end of the rod or rope. After the correct compression is placed in the concrete, the rod or rope is anchored against the concrete.

In the pretensioning method, high-strength strands are first elongated to the correct stress or strain and the concrete cast around the strands. After the concrete has hardened, the strands are cut off even with the surface of the concrete, which permits the strand to shorten. Since the concrete is well bonded to the strands, the concrete and strands shorten the same amount, the concrete being compressed while the high tension in the strand is reduced.

● **Why concrete ties failed.** The use of concrete railroad ties is not new in this country. The first experimental reinforced concrete ties were installed in 1891 on the Delaware, Lackawanna & Western near Hoboken, N. J. Several thousand ties were subsequently installed on several other railroads but have been removed over the years, due principally to:

(1) *Corrosion of reinforcement.* Since the ties were made of reinforced concrete, tension cracks developed at points of high bending moments thus exposing the reinforcement to corrosive conditions.

(2) *Failure of rail fastenings.* Various types of fastenings were used with the ties but the majority depended on the fastening bolts to carry the lateral forces from the trains. The lateral forces produced bending in the bolts which resulted in repeated-load failures.

(3) *Lack of sufficient beam strength to carry imposed bending moments.* The bending resistance of the ties was reduced by the holes provided for the rail-fastening bolts. In addition, concrete made during this period was not capable of resisting freezing and thawing as air-entrainment was not used.

(4) *Abrasion of concrete from ballast.* Concrete made during this period did not have the proper strength to resist the fretting action of the ballast.

Following the second World War, European railway trackage and structures were in poor condition due to lack of maintenance, scarcity of materials and extensive war damage. Almost complete track renewals, including structures, had to be planned.

● **Adopted first in Europe.** A careful study of the merits of both reinforced concrete and prestressed concrete indicated that the benefits derived from the use of prestressing justified its use in the manufacture of ties. The two principal benefits are: (1) Prestressed concrete is relatively free from deep cracks that are a characteristic of reinforced, concrete, and (2) an economical design for prestressed concrete requires a high strength and durable concrete and such concrete will better resist weathering and abrasion.

The use of prestressed concrete for the manufacture of railroad ties in this country was not considered until 1956 following an inspection trip through several European countries to determine the merits of prestressed concrete for bridge construction. The AAR Research Center realized that in the United States, sufficient timber was available for ties in the foreseeable future but considered it advisable to design a tie for experimental installation so experience could be gained with its service performance.

The extensive use of prestressed concrete in Europe for the construction of large bridges (railroad girders as long as 160 feet and arches for highway traffic as long as 370 feet were built) was clear indication that concrete, when prestressed, was a suitable material for bridge construction. Many laboratory and field studies have been conducted by the AAR Research Center on the ability of such bridges to economically carry the heavy railroad loads in this country. Such studies have indicated:

(1) Structures can be designed to carry millions of repetitions of our heavy loads.

(2) The concrete will be free from deep cracks.

(3) Prestressed concrete structures have small depth-to-span ratios for greater under clearances.

(4) An economical use of high strength steel and concrete is obtained.

(5) Greater resistance to diagonal tension is provided.

The American railroads have built many outstanding prestressed concrete bridges and many more are in the planning stage. It can truly be said that the potentialities of this type of structure are unlimited. ■

'RAIL WHALE' has coupled length of 80 feet 2½ inches; heavier pressure car's light weight is 126,000 pounds.

PRR aim: Tank cars to gain new traffic

Chemicals, other liquids are the traffic targets as road builds two 150-ton, 38,000-gallon tank cars.

High-speed movement will produce equipment utilization that should make possible water-competitive rates.

Two 38,000-gallon "Rail Whale" tank cars recently completed by the Pennsylvania are about to begin demonstrating their potential for economical transportation of bulk liquids over long distances. H. W. Large, PRR vice president-traffic, says that the new cars were developed following extensive market studies.

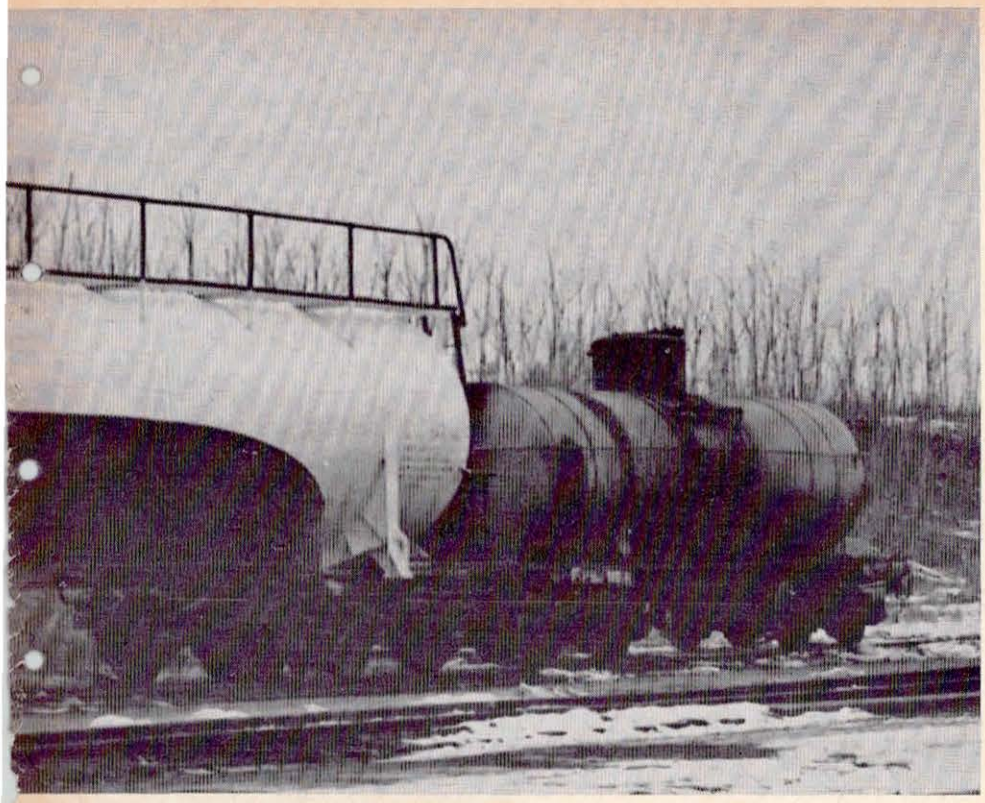
● **Ability to compete.** "Our marketing research," explains Large, "indicates that we can compete favorably for the long-haul transportation of chemicals and other liquid commodities if we move them at relatively high speeds and in large quantities to gain maximum efficiency in the use of equipment. We are confident the prototype cars fit that requirement and will give us entry to a new market. They also eliminate the necessity for heavy investment in storage facilities that are required when shipments move via water transport."

Soon after its completion at the PRR's Altoona (Pa.) shops and following only a brief display in Philadelphia, the first car was off to Houston, Tex., for its initial load. The car was scheduled to move a cargo of vinyl chloride from the Houston plant of the Tenneco Manufacturing Co. to the firm's Polymer Division at Burlington, N.J.

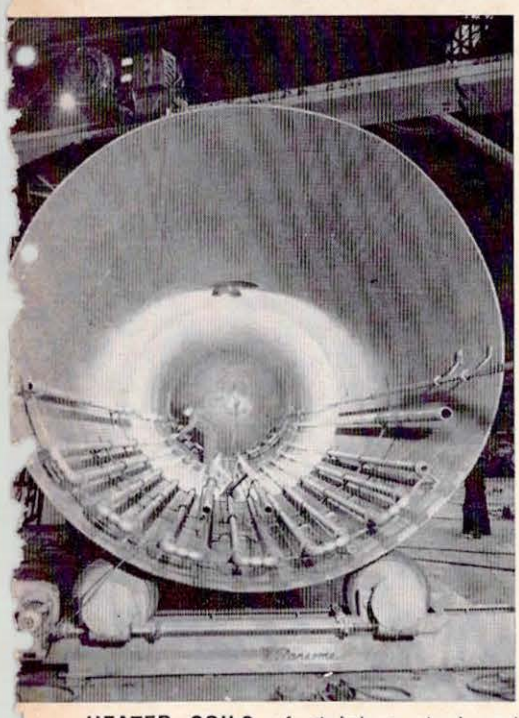
● **No fleet owner.** Large and other PRR officers have reiterated that the railroad does not plan to enter the tank-car business, either as a builder or fleet owner. Instead, PRR expects only to carry the project through the experimental phase to encourage private car lines to extend to their fleets the principles developed by the railroad. In a PRR-sponsored contest, employee suggestions led to designation of the big tank cars as "Rail Whales."

By spring another PRR giant—a 150-ton, 6,500-cubic-foot covered hopper (RA, Sept. 6, 1965, p. 7)—will take to the rails to demonstrate new capabilities in the moving of dry bulk materials. For the hopper, the PRR predicts advantages corresponding to those for tank cars.

● **Six-wheel trucks.** Key to the high capacity, as PRR officers see it, is the six-wheel truck used under both tank cars and scheduled to go under the forthcoming covered hopper. "The new tank cars run 50% heavier than freight cars now being built in quantity," says W. E. Lehr, chief mechanical officer; "but they will be able to operate at fast freight-train speeds wherever standard 100-ton cars can run. Improved distribution over twelve wheels, as compared to the usual eight, makes possible this freedom of operation."



SIX-WHEEL TRUCKS are pointed out by W. E. Lehr, PRR chief mechanical officer, as R. E. Franklin, vice president-transportation and maintenance (center), and D. E. Smucker, vice president—operations, make inspection. The trucks were carefully appraised in course of the Pennsy's tests before the car went into revenue service.



HEATER COILS of stainless steel and heated outlet to simplify unloading were installed in TM-1 tank by Berwick.

The truck being used is the six-wheel Ride Control design of American Steel Foundries previously applied to the Atlantic Coast Line's 150-Ton "Whopper Hopper," a 5,500-cubic-foot covered hopper car built in 1964 (RA, Sept. 14, 1964, p. 22). This truck has since been subjected to rigorous testing by the Coast Line.

At the time the tank-car developments were undertaken by the Pennsylvania, A. J. Greenough, president, noted that the road was prepared to spent $100,000 on the project. He explained that the high cost of experimental cars would not be indicative of the ultimate cost based on quantity production.

● **Team effort.** For design and fabrication of the tanks—actually, the entire carbody because of the absence of center sills—the Pennsy teamed with Berwick Forge & Fabricating Co. of Berwick, Pa. While Berwick had the structural design under way, PRR traffic and mechanical men were contacting potential shippers as to features which would make the cars as universally attractive as possible. Shippers' suggestions about loading and unloading requirements were incorporated in the two prototype cars so as to fit them to handle a wide range of commodities.

Berwick was tooled to handle the entire tank assembly job with two exceptions: rolling of the alloy-steel tank rings which was performed by Lukens Steel at Coatesville, Pa., and stress relieving of the completed tanks by American Car & Foundry at Milton, Pa. Upon delivery to the PRR Samuel Rea shop at Hollidaysburg, Pa., the tanks were placed on the ASF trucks and the remaining assembly operations completed.

● **Interior coatings.** The cars were then sent to the nearby facility of Lithcote Corp. at Altoona, Pa., for application of interior linings. Both cars were given heat-resistant, high-bake phenolic coatings specially suited to ladings of solvents, many chemicals and food products.

The first car completed was tested extensively, including impacts under full load at the 800,000-lb capacity of the draft gears and "rock and roll" tests over a special track, where, according to a PRR spokesman, the car showed no tendency to develop lateral oscillations.

● **Basic differences.** The two cars differ primarily in their tank-shell thickness. One, a pressure car designated PRR Class TP-1, conforms with ICC Specification 112A340W, being designed for hauling vinyl chloride at pressures up to a safety-valve setting of 255 psi. The other is a non-pressure car, designated PRR Class TM-1 and conforming with ICC specification 111A110W-1, which was planned for hauling styrene, but is expected to be tested with loads of vegetable oils, petroleum derivatives and other liquids. Shell thickness for the TP-1 car is 5/8 and 11/16 inch; for the TM-1 car, 7/16 and 1/2 inch.

Each car is fitted with sampling line, thermometer well and level gauge in the manway. The TP-1 is equipped for top loading and unloading only; the TM-1 car is top loaded, but may be unloaded from top or bottom.

The cars were built in accordance with AAR Plate C equipment outline. The rail load for each car, when filled, is 394,000 pounds. ■

NYC: The hunt for new talent goes on

The road has an aggressive recruiting campaign to keep its personnel pipeline flowing full.

J. E. Martin, NYC director of organization development, standing, and E. D. Adamson, manager, recruitment and employment, talk to a prospective employee.

Today's college graduate, according to personnel men, is becoming very selective so far as deciding on a company to settle down with is concerned. And the railroads—often criticized for their lack of aggressive recruiting in the past—are fast learning that you have to get in there and scramble for the best men to fill the management ranks.

One road that studied hard and learned the ropes of academic recruitment well is the New York Central. Instead of waiting for promising young men to knock on their corporate doors, the road regularly goes out and beats the bushes for new faces.

Currently, the NYC is in the midst of a broad talent search to find its future top men. And this is the time of the year that the recruiting tempo steps up, as February graduates begin job hunting and June graduates begin thinking about their first job.

As the first phase of its current recruiting campaign, the Central mailed off more than 4,000 copies of a new brochure entitled "A Future for You with a Modern Railroad" to 95 universities and colleges. As a follow up, representatives from the railroad will visit each of the campuses during the year.

● **Covering the ground.** NYC's recruiting efforts, under the direction of James E. Martin, director of organization development, and Earle D. Adamson, manager of recruitment and employment, will eventually be felt in 132 institutions of higher learning from Maine to Miami, and west to Denver. Both undergraduate and graduate schools are on NYC recruiters' lists. The road uses district personnel men to recruit in certain geographical areas, backed up by a three-man staff in NYC headquarters in New York.

"We now have a more professional approach to recruiting," says Adamson. "Years ago, each department went out to the colleges and got its own men. Now we work with recruiters who are specialists, who are conditioned to employee recruiting."

Picking the right men to work as recruiters is often as difficult as picking the potential employees, NYC men say.

"We screen our men—the selection of the recruiter is very important," Martin adds. "We pick people who can tell our story. The impression a new man gets from the recruiter who represents the railroad can often mean the difference between coming to work for the Central and not."

And what about the "image" that railroads have in the eyes of today's graduates? Is it true that potential job candidates look upon the railroad industry as old, tired and unprogressive?

"I get furious when I hear this 'image' business brought up," Martin says, "because from all of my experience in recruiting I've learned that the railroads come off very well in the eyes of our young people. We have no trouble recruiting people, we're right up there with other top industries and can match their offers."

Martin admits that some graduates are enticed by high starting salaries offered by competing industrial recruiters—notably aerospace representatives. He feels that, frequently, the job-seeker places too much emphasis on beginning pay, that there are other more important considerations.

"In our brochure, we put it right on the line," Martin points out. "Very concisely we tell them, by category, what the requirements for the job are, length of training, the type of training, where they'll probably be assigned, and what's in it for them in the future."

The Central finds that some of its interviewees don't become employees because the young men are reluctant to accept a job that involves travel or relocation.

"We're honest with them on this point," Adamson says. "We tell them what's involved and let them make a decision."

Last year, Central recruiters interviewed a total of 1,600 college people. This year, the number is expected to be higher, in a search for 165 bright young people with management potential.

Contrary to what some may believe an industrial recruiter looks for in a man, NYC men don't necessarily limit their talent search to the top 15% of the graduating class. The road's field men look at the potential employee from a number of angles.

One young graduate who was hired was nowhere near the top of his class, but had many other good qualities that NYC men believed marked him as good potential management material. A check into his background disclosed that while going to college he found it necessary to work some 52 hours a

week in an automobile plant to support his family.

• **Laboring in the vineyards.** The "crops" of graduates available each year vary as do all crops. Some years there is a bumper supply of business graduates available; at other times the railroad interviewers are overwhelmed with applications by civil and mechanical engineers. At the moment, recruiters are finding accounting people in short supply.

On the campuses, NYC recruiters usually work out of the college placement office, having advertised their visit weeks in advance through posters and other media.

A large percentage of those interviewed at the college are eliminated from consideration at an early stage, and those with promise are invited to New York headquarters at company expense for in-depth interviews. There, personnel men, and the development head under whom the prospective employee would work, get a chance to know the job candidate.

The road's job promotional material is concise and to the point. A one-page information sheet, for example, offers artwork on the front side with the heading "Here's Where You Fit In." Artist's sketches with symbols of the various railroad departments list market planning and research, freight sales, technical research, computer services, industrial engineering, operating, marketing-pricing, coal and ore, real estate, and finance. Under each department heading NYC lists the types of graduates it needs, i.e., Bachelor of Science, electrical engineers, and other academic categories.

In the introduction to the 18-page brochure that is now the NYC prime recruiting piece, President A. E. Perlman says his railroad "would welcome the opportunity to discuss with you the advantages of joining the 'Road to the Future,'" and urges the prospective employee to get in touch with the railroad.

The booklet cites the conclusion of a group of distinguished analysts who recently surveyed the Central's operations: "The chief characteristic of the New York Central System is modernization, innovation and progressive planning."

"The advancing technological frontiers of the Second Industrial Revolution make it imperative to find and develop dedicated, intelligent and creative men for all of our management positions," says Perlman. NYC's good experience with its aggressive recruiting indicates it should be able to keep the pipeline full of just such men. ■

LEWIS

AS THE PUBLISHER SEES IT...

SNOWBOUND—Even the snowbirds were snowbound in the cold spell and snowstorm that hit the Eastern seaboard late in January. Many of those planning to attend the First International Conference on Urban Transportation at Pittsburgh Feb. 1—and who, like my associate Luther Miller and I, took the train—missed the whole first day. Our departure from New York was three hours 20 minutes late, and arrival at Pittsburgh was at 7:30 p.m. instead of 7:05 a.m. Frozen switches, frozen train lines and traction motor failures caused most of the delays.

The employees I encountered did a really admirable job. They worked in conditions of extreme adversity for long, tiring hours. An utterly exhausted dining car crew on our train handled capacity loads uncomplainingly. There was no supervision for the waiters and kitchen crew and they didn't need it. Along with thousands of employees who worked in the cold to keep trains moving at all, they deserve a lot of praise.

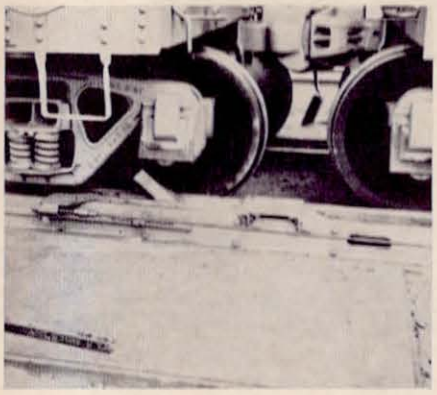
CANADIAN KNOW HOW—Maybe it's just an impression, but it seems to me that our neighbors to the north are able to take winter weather very much more in stride. Of course they are used to it, but American roads, at least those north of the Mason-Dixon, can almost depend on one or more severe storms and/or cold spells each winter. Preventive measures, to the extent they are not already taken, would seem to be less expensive than the service interruption that their lack entails.

TRANSPORT CONFERENCE ACHIEVEMENT—Despite adverse weather, the Urban Transport Conference was a real success, judging by the consensus of the 1,300-plus who attended. Railroad suppliers and other Pittsburgh industrialists who promoted the conference and handled the stimulating program merit the big hand they got. A second conference, perhaps of a less general nature and pinpointing specific problem areas of urban transportation, seems almost assured.

WHY NOT STANDARD GAUGE?—"Sy" Kashin, director of the Queens-Long Island Mass Transportation Program, reminded some of us at the conference in Pittsburgh that the six existing rapid transit lines in North America have three different track gauges. Philadelphia has two gauges—standard 4′ 8½″ and 5′ 2¼″—and Toronto is 4′ 10⅞″. Now comes San Francisco with a brand new gauge—5′ 6″. Justification for the BART wide gauge is an engineering decision based on high winds in the Bay area and the speed of operations. It is unfortunate that this creates incompatibility with most transit sysems world-wide and with standard railways. While I am no engineer, I wish that somebody would tell me why the Japanese, in a land noted for typhoons, chose standard gauge on the New Tokaido Line engineered for extremely high speeds.

RAILS HELP THE LANDSCAPE—"Zech" Chafee of PRR's research department who, like so many others, wrote to express sorrow over the passing of Jim Lyne, included a postscript. It referred to an enclosure from British Broadcasting's "Listener" on the visual appeal of railways, and ZC expressed the thought that Jim would have liked to look at it, too. The writer feels that a railway line adds a bit of character to the landscape—"they sew it together and give it more significance"—and that railway architecture often creates the atmosphere of localities which can be perceived "merely by looking at uncaptioned photographs." It is an interesting observation that applies here as much as in England, and I agree that Jim Lyne would have enjoyed the article and its theme.

NEW **PRODUCTS** REPORT

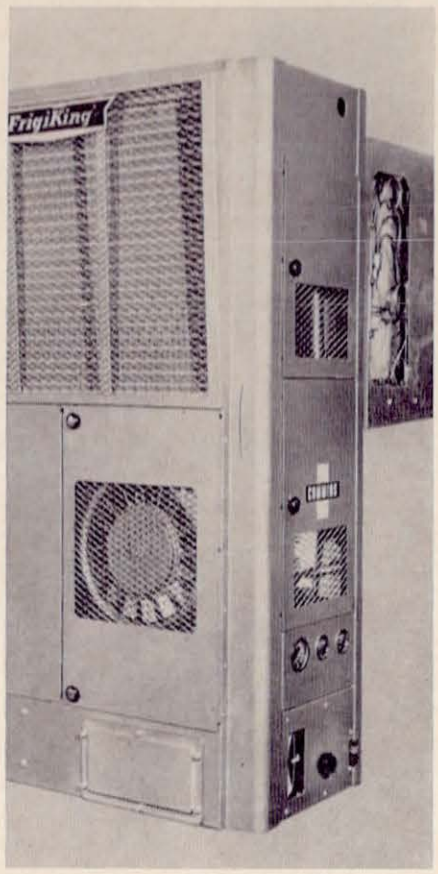


Car Pusher (RA-1)

The Nolan hydraulic car pusher consists of a hydraulic cylinder outside of each track with pusher dogs engaging the outside frame of the trucks. Cylinders and pusher-dog carriages are mounted on a plate spiked to the ties. The push-button-operated unit will push 45,000 lb with a 40-hp motor and will start and move 2,000 tons on level track at 25 fpm. It can be interlocked with the brake of the retarding hoist or the air valve operating the car brakes and is said to be useful, even in inclement weather, as an accessory in loading installations already using a retarding hoist or the car brakes themselves with a compressor on a down grade. When cars will not move under normal braking or car retarder action, a push on the button will activate the hydraulic cylinder which, in turn, provides directional movement by the pusher dogs. Oil is supplied to the cylinder by a 100-gallon compact power pack, using a gear-type hydraulic pump. Oil-level switch and relief valves fully protect the hydraulic system. The power pack, itself on skids, supplies oil through hoses to cylinders. *Nolan Co.*

Cable Carrier (RA-4)

The B475 cable carrier telephone system provides 24 single-sideband voice frequency channels using the N-type carrier frequency allocation from 36 to 268 kc. It uses separate, non-loaded cable pairs and different frequency bands for each direction of transmission. The unit provides a 200 to 3450 cps channel bandwidth (at 3 db points) with a long term (6 months) net loss stability of ±0.5 over extreme operating conditions. *Lynch Communication Systems Inc.*



Refrigeration Unit (RA-2)

The MTD nose-mount refrigerating-heating system, fueled with gasoline or propane, is designed to serve medium capacity trailer applications requiring protection from zero to 70 deg F. Automatic start-stop is standard. The unit will refrigerate or heat to any desired thermostat setting. Supplementary electric heat is provided on defrost and heating cycles only. Compressor-and-engine assembly is shock mounted. *Frigiking Co.*

Carton Clamp (RA-3)

The Little Giant carton clamp, which weighs 950 lb, has an opening range of 24 to 74 in. and handles 1,500-lb payloads on 2,000-2,500-lb gas or electric lift trucks. Pads having articulating type suspension have an area of 50 in. contact height, with 46 in. minimum distance from tip of pad to front face of back rest. Pads are faced with ruff-top rubber, bonded to steel sheets. Clamps have equalizing and side shifting arm movement on opening. *Little Giant Products, Inc.*

RAILWAY AGE
WEEKLY

30 Church Street, N.Y., N.Y. 10007 READERS' SERVICE (Att. George Johnson)

PLEASE SEND ADDITIONAL INFORMATION ABOUT PRODUCTS IN ADVERTISEMENTS NUMBERED: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

PLEASE SEND INFORMATION ABOUT PRODUCTS DESCRIBED ON PAGE 30 MARKED RA-1 RA-2 RA-3 RA-4

NAME ..... TITLE.....

COMPANY .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

2/14/66

☐ Please send information about subscribing to Railway Age

LETTERS FROM READERS

In memory of Jim Lyne

Richmond, Va.

To the Editor:

Many of us never had the pleasure of meeting Mr. Lyne in person, but reading his weekly "Action Page" was almost like knowing the man.

His philosophy will be remembered and quoted for years to come. His readers will miss him.

The January 24 issue was an unusual and fitting tribute to a great man.

Carlton N. McKenney
Old Dominion Chapter
National Railway Historical Society

Chicago

To the Editor:

We feel that Jim Lyne's passing is not only a loss to your organization, but perhaps even a more serious loss to the railroad industry. He was among the great leaders in the publication field who had the knowledge, the integrity and the courage to bring about reforms in government laws and regulations which had been detrimental to us for so many years.

Fortunately, you have a very good editorial staff which provides good leadership in your various publications and we feel confident that his place can be taken so that your wonderful help and wonderful progress can be continued.

Fred Peronto
Executive Vice Chairman
Mechanical Division, AAR

Dr. Cottrell interview

St. Paul, Minn.

To the Editor:

Railway Age is to be highly commended for its featured interview with Dr. Fred Cottrell in the article entitled "Technological change and the railroads" (Nov. 8, 1965, p. 16). Dr. Cottrell's splendid analysis of the sociological dilemma confronting technological advances made within the railroad industry is crisp, penetrating, and at times disturbingly candid. He has certainly underscored, in a most lucid manner, the whole spectrum of causes and meanings underlying labor-management relations in respect to innovation and change. His insight into the issues and alternatives facing future labor leaders and management is poignant. Certainly, articles, such as this one, which are contributive to a better understanding and dialogue on the problems and issues facing the entire railroad industry, are a necessary reading must, if leaders of both sides are to be properly informed when effecting decisions which will allow the railroad industry to survive and grow, and assure a secure future for a better labor force and labor partnership.

Charles E. Mott,
Management Trainee
Northern Pacific Railway

Review and Outlook

Baltimore, Md.

To the Editor:

Please accept my highest compliments on your January 17, 1966, issue. The 1965 Review and 1966 Outlook gave a very intellectually satisfying over-all view of the past year as well as an intelligent forecast of the year to come.

I have been enrolled in a management training program for a major Eastern railroad for the past year and a half. I have learned a great deal by reading Railway Age during my brief tenure in the railroad industry. For this I offer a whole-hearted thank you.

J. Keith Crisco
Management Trainee
C&O-B&O Railroad

THIS SEAL SAYS "STEAL"

THIS SEAL SAYS "STOP"

(WHAT'S THE WORD AROUND YOUR PLACE?)

All flat seals can be opened in seconds . . . and closed without leaving a trace. A child can do it, using a knife, screwdriver, needle, safety pin, or strip of thin steel. Anyone who works around seals knows it. AND PLENTY OF THEM DO IT! That's why an apparently intact flat seal on your cargo is no proof of anything. ONLY THE TYDEN SEAL HAS NEVER BEEN OPENED WITHOUT LEAVING CLEAR PROOF OF TAMPERING. That's protection. And anything less is a clear invitation to steal. For details and free samples, just drop us a line.

THE TYDEN CORPORATION
2 INDUSTRIAL PARK RD. • HASTINGS, MICH.

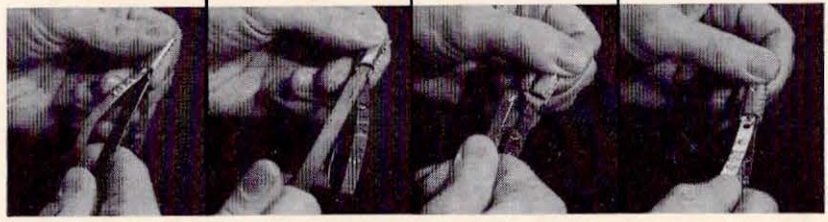
HERE'S HOW THIEVES OPEN AND CLOSE A FLAT SEAL IN SIXTEEN SECONDS WITHOUT LEAVING A TRACE:

A thin piece of steel (or other simple tool) is inserted between the bands of the locked seal, and pressed upward to flatten the two engaged hooks of the locking mechanism.

The tool is re-inserted along the top band, disengaging the hook on the band from the hook enclosed in the seal housing. The seal is now unlocked and ready for opening.

The top band is now withdrawn from the housing along with the tool. (The tool prevents the hook on the band from re-engaging the hook in the housing.)

Resealing takes less than two seconds, since all elements of the flat seal are still completely intact. On completion there is no visible evidence of tampering.



Circle 10 on reader service card

Simmons-Boardman re-aligns its sales operation

C. J. Fisher named to new post of vice president—sales. J. S. Vreeland assigned new duties.

Jim Fisher

John Vreeland

C. James Fisher has been appointed vice president—sales of the Simmons-Boardman Publishing Corporation, Railway Division, effective Feb. 16. In that position, he will direct world-wide advertising sales for Railway Age; Railway Locomotives & Cars; Railway Track & Structures; Railway Signaling & Communications; Railway Purchases & Stores; and International Railway Journal.

Fisher will maintain offices at 30 Church St., New York, Simmons-Boardman's executive headquarters. He moves to New York from Pittsburgh, where he has directed the Railway Division's sales activities for the past 10 years, first as district manager and, since 1961, as regional vice president.

In announcing the appointment, Robert G. Lewis, vice president—operations of Simmons-Boardman, and publisher, Railway Division, noted that the position of vice president—sales is a newly created one that "reflects the growth of our railway publications, which is paralleling the great renaissance now taking place in the railway industry."

Lewis also announced the appointment of John S. Vreeland as publisher of Plant Location, a Simmons-Boardman annual; and general sales manager of International Railway Journal, which is published monthly in The Netherlands. He will continue to serve as vice president and sales manager, Eastern Region.

"These changes," said Lewis, "are designed to strengthen our position as the world's leading publisher of railway periodicals. By maximizing our sales effort, we will insure a continued high degree of excellence in our editorial product."

Both Fisher and Vreeland came to Simmons-Boardman with long backgrounds of railway experience.

A native of Wheaton, Ill., Fisher worked briefly in 1935 for Pennsylvania Air Lines, Chicago, as district sales manager, then joined the Pennsylvania Railroad in 1936. He worked in the Pennsylvania's passenger department in Akron, Chicago, Cleveland, Columbus, Buffalo, Miami and Pittsburgh before joining Simmons-Boardman in March 1956. He is a member of the Railway Club of Pittsburgh, the Pittsburgh Press Club, the Association of Industrial Advertisers, the Pittsburgh Advertising Club and the Traffic Club of Pittsburgh.

Vreeland was born in Cincinnati, Ohio. After earning a B.S. degree in chemical engineering at Iowa State College, he joined the Chicago, Rock Island & Pacific Railroad's engineering department. He was a track supervisor prior to coming with Railway Age as an associate editor, in 1938. He joined Simmons-Boardman's sales department in 1946, and was appointed a vice president in 1951. He is a member of the Canadian Club, the Newcomen Society, the New York Railroad Club, and the Metropolitan Maintenance of Way Club. ■

For C.I.T.: A transport institute

Pittsburgh, the self-described "mass transit capital" of the world, has now staked a further claim to the title. With an initial gift of $300,000 from the Richard King Mellon Foundation, the Carnegie Institute of Technology has established a Transportation Research Institute that will engage in "broad research studies into problems of urban and inter-urban transportation."

Creation of the Institute was announced at the close of the First International Conference on Urban Transportation, which attracted 1,300 transit planners to Pittsburgh early in February (RA, Feb. 7, p. 16).

H. Guyford Stever, president of C.I.T., listed four objectives:

1. To perform transportation research for federal, state and local governments, foundations, civic organizations, businesses and industry.

2. To provide the organizational framework within which seminars, conferences and symposia can be organized in the several areas related to urban and inter-urban transportation.

3. To develop an educational program, at the graduate level.

4. To advance education and contribute to scientific knowledge in the field of transportation.

Director of the Institute will be Dr. James P. Romualdi, professor of civil engineering at C.I.T. Associate directors will be Dr. Thomas E. Stelson, professor and head of civil engineering, and Dr. Milton C. Shaw, professor and head of mechanical engineering. ■

WATCHING **WASHINGTON** WITH WALTER TAFT

TAFT

TIME LAG, PAST AND PRESENT—Time lag in general rate cases was quite an issue during the depression of the 'Thirties and World War II. The railroads then complained that the ICC took too long to grant increases to offset depression-time traffic losses and the wartime's rising prices and wages. Legislation was proposed to expedite Commission procedures. It got nowhere, principally because the Commission began to move faster, and the railroads began to lose faith in the general-rate-increase approach to solution of their financial ills.

Now there's high-level complaint against time lag in rate-reduction cases. It comes from President Johnson's Council of Economic Advisers. The Council thinks regulators have been taking too long to authorize rate cuts reflecting technological improvements in transport equipment and facilities. This view is expressed in the Council's annual report—the same report which stated the Council's position in favor of marginal-cost rate making and thus against the ICC's fully-distributed-cost approach (RA, Feb. 7, p. 12).

DELAYED EFFICIENCY MEANS LOSS—Growing efficiency in transportation "requires that new technological opportunities be seized promptly," the Council says. To illustrate the nature of this problem, it tells how long it took the Southern to get ICC approval of its reduced rates for shipments of grain in "Big John" hopper cars. As the Council figures it, it took more than four years to get the entire Southern plan approved.

That inspired a comment suggesting that "no economy can be fully efficient if it takes four years to determine pricing for such new innovations." The report goes on to predict that difficulties of this type will be mitigated if marginal-cost rate making and "flexibility of investment" become more integral parts of regulatory policy.

CAPITAL SHOULD WORK FULL TIME—To the Council, "flexibility of investment" seems to mean easing the regulatory approach to new-operation proposals of motor carriers, and to abandonment applications of the railroads. After referring to how trucks can quickly establish new services without making the large fixed investments required for railroading, the report says: "More liberal standards for the modification of the scope of service, particularly for the abandonment of unneeded railroad service, could allow a competing service—if available and more efficient—to handle the traffic."

Following through along this line, the report says investment capital is scarce—and "if capital can be withdrawn from little-used service, capacity can be expanded in the areas of profitable growth." Then comes the call for prompt seizure of new technological opportunities, because: "The lag between average practice and the best possible practice is critical, and reducing this lag will increase productivity gains. Prompt adoption of new technological opportunities enhances the return to the public and to the carrier from private initiative in innovation."

DIVERSIFICATION FAVORED—The report also includes what seems to be an endorsement of the railroad industry's diversification proposal. That's the industry's call for more freedom to own and operate other modes of transportation. "New technological opportunities could be fully exploited by removing obstacles to combinations of modes of transport," the report says.

Elsewhere, it advances arguments supporting President Johnson's recommendations for adequate user charges on publicly-provided transport facilities. So the Council seems to favor, in principle at least, three proposals of the railway industry's long-standing Four Freedoms Program, i.e., the calls for freedom to make competitive rates, freedom from subsidized competition, and freedom to diversify. This program's fourth call is for freedom from discriminatory taxation, the complaint there being principally against inequitable state and local taxes.

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PEOPLE IN THE NEWS

ATLANTIC COAST LINE.—Charles E. Mervine, Jr., assistant to president, assistant secretary, assistant treasurer and director of personnel, **Richmond, Fredericksburg & Potomac,** Richmond, Va., appointed director of personnel for the ACL, Jacksonville, Fla. Mr. Mervine succeeds **Wythe D. Quarles, Jr.,** appointed vice chairman, **National Railway Labor Conference,** Chicago (RA, Jan. 31, p. 11).

D. C. Reynolds, diesel storekeeper, Waycross, appointed assistant general storekeeper there, succeeding **R. F. Paulk,** promoted to general storekeeper (RA, Jan. 17, p. 122). **A. Meigs, Jr.,** appointed assistant purchasing agent, Jacksonville.

J W. Flowers named assistant superintendent, Charleston division, Augusta, Ga.

N. S. DeMuth, freight traffic manager, Jacksonville, promoted to general freight traffic manager there. **J. K. Herring** named general agent, Palatka, Fla.

BOSTON & MAINE.—Earl C. Cone, assistant chief mechanical officer, Boston, retired Jan. 31, after 48 years of service. **Wallace H. Chaplin,** assistant superintendent locomotive maintenance, appointed general superintendent motive power. **James A. Heselton,** superintendent car maintenance, named general superintendent cars. **Hugh W. Stillings,** general foreman locomotives, appointed superintendent motive power, Boston Division. **Raymond F. McCaffrey** named general foreman, Boston Engine Terminal. All the above will have headquarters at Boston. **Walter E. True,** assistant superintendent locomotive maintenance, Greenfield, Mass., appointed superintendent motive power, Fitchburg Division, at that point. **Thomas W. Airey,** assistant superintendent car maintenance, East Deerfield, Mass., appointed superintendent cars.

Harry Blake, director of public relations, also elected secretary.

CHICAGO & NORTH WESTERN.—Francis V. Koval, assistant to president-public relations, named director of public relations. **James R. MacDonald** appointed assistant director of public relations.

CLINCHFIELD.—W. M. Snodgrass appointed assistant general freight agent, Erwin, Tenn., succeeding **C. H. Hager,** retired after nearly 43 years with this road. **R. L. Branham** succeeds Mr. Snodgrass as assistant to general freight agent, Erwin. **A. R. Tipton,** commercial agent, Charlotte, N.C., appointed district freight agent, Columbia, S.C., succeeding **C. E. Bloom,** who retired after almost 46 years of service. **Robert D. Alexander,** commercial agent, Spartanburg, S.C., appointed district freight agent, Kingsport, Tenn., succeeding **Walter L. Allen,** who retired after more than 45 years with the Clinchfield. **John Muska,** commercial agent, Columbus, Ohio, promoted to district freight agent there, succeeding **George H. Smith,** retired after 40 years' service. **T. J. Britton** appointed industrial agent, Erwin.

James L. Lonon, trainmaster, Erwin, Tenn., appointed superintendent, succeeding **D. H. Hendrix,** retired after 43 years service.

COLUMBUS & GREENVILLE.—T. E. Eastburn, assistant auditor, Columbus, Miss., promoted to auditor, succeeding **W. E. Roberts,** who has relinquished that position to devote full time to the duties of secretary—treasurer. **H. J. Carr,** chief clerk to general manager, appointed car accountant, succeeding **H. G. Hankinson,** retired after 45 years of service.

COTTON BELT.—Harold W. Mason, general freight agent, Tyler, Tex., appointed assistant freight traffic manager, St. Louis. **B. J. Barron** named assistant general freight agent, St. Louis.

G. Richard Gregory appointed general agent, Philadelphia, Pa., succeeding **Lyle E. Wikenhauser,** promoted to assistant general freight agent, Memphis, Tenn., replacing the late **Charles W. Baker.**

DELAWARE & HUDSON.—W. L. Campbell, Canadian sales agent, Montreal, Que., retired Jan. 1, after more than 42 years of service. **T. F. Winnett,** Canadian sales representative, appointed assistant Canadian sales manager, and is succeeded by **E. J. Irwin.**

Axel Schmid appointed sales representative, New York, succeeding **Robert M. Duphiney,** promoted to assistant district sales manager there.

DENVER & RIO GRANDE WESTERN.—Paul O. Spurgeon, Central traffic manager, Chicago, retired Dec. 31. Traffic managers appointed: **D. J. Lewis,** Chicago; **G. L. Nicolin,** Detroit; **J. B. Norwood, Jr.,** Denver.

C. M. Wildt named assistant traffic manager, Pueblo, Colo., succeeding **H. E. Cash,** promoted. **L. O. Wurm** appointed general freight agent, Denver.

General Agents named: **T. D. Odwalt,** Chicago (succeeding Mr. Lewis); **E. H. Nelson,** Detroit; **W. P. Menard,** Cincinnati (succeeding Mr. Wildt); **M. L. Colby,** Minneapolis (succeeding Mr. Menard); **R. J. Schneider,** Colorado Springs, Colo., (succeeding Mr. Odwalt).

M. M. Tapper appointed district freight and passenger agent, Columbus, Ohio, succeeding Mr. Nelson. **R. W. Bailey** named district freight and passenger agent, Milwaukee.

(Continued on page 39)

CAREER OPPORTUNITY

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MARKET OUTLOOK

Carloadings

Loadings of revenue freight in the week ended Feb. 5 totaled 487,617 cars, the Association of American Railroads announced on Feb. 10. This was a decrease of 25,886 cars, or 5.0%, compared with the previous week; a decrease of 13,569 cars, or 2.7%, compared with the corresponding week last year; and a decrease of 28,821 cars, or 5.6%, compared with the equivalent 1964 week. Ton-miles generated by carloadings in the week ended Feb. 5 are estimated at 12.4 billion, an increase of 3.7% above the corresponding week of 1965, and no change from the 1964 week.

REVENUE FREIGHT CARLOADINGS
For the week ended Saturday, Feb. 5

District	1966	1964	1963
Eastern, including Allegheny and Pocahontas ..	185,245	203,480	206,018
Southern	99,433	102,717	105,158
Total Eastern and Southern Districts	284,678	306,197	311,176
Northwestern .	60,545	57,662	60,000
Central Western	105,706	102,613	107,502
Southwestern .	36,688	34,714	37,760
Total Western Districts	202,939	194,989	205,262
Total All Roads	487,617	501,186	516,438
Commodities:			
Grain and Grain products	53,418	44,078	54,697
Livestock	1,357	1,771	1,844
Coal	91,492	96,193	101,230
Coke	7,920	8,616	7,009
Forest Products	35,975	36,499	38,485
Ore	14,984	14,934	14,023
Merchandise l.c.l.	6,283	9,883	13,956
Miscellaneous .	286,188	289,212	285,194
Feb. 5	487,617	501,186	516,438
Jan. 29	513,503	527,826	532,686
Jan. 22	536,467	522,746	531,617
Jan. 15	544,556	532,367	499,342
Jan. 8	508,282	531,058	528,770
Cumulative total, 5 weeks	2,590,425	2,615,183	2,608,853
Estimated revenue ton-miles (billions) 5 weeks	65.3	62.1	62.2

PIGGYBACK CARLOADINGS.—U.S. piggyback loadings for the week ended Jan. 29 totaled 19,776 cars, carrying 32,264 trailers, compared with 18,296 cars, carrying 29,375 trailers, in the corresponding 1965 week. Loadings for 1966 up to Jan. 29 totaled 76,933 cars, carrying 125,645 trailers, compared with 69,397 cars, carrying 113,250 trailers, in the corresponding period of 1965.

IN CANADA—Carloadings were not available as this issue went to press.

FREIGHT-TRAIN CARS

► *Canadian Pacific.*—Plans to add 1,000 covered hoppers to its fleet this year to handle increasing shipments of dry bulk commodities. In 1965, CP accepted delivery of 900 covered hoppers, costing more than $16 million. The potash boom in Saskachewan, and increasing demand by shippers of sugar, cement and fertilizer for covered hoppers necessitated the enlargement of the CP fleet.

► *Norfolk & Western.*—Will order 1,400 new freight cars and rebuilt 1,200 box cars. Included in the new car order will be 1,000 85-ton coal hoppers to be built in N&W shops at Roanoke at a cost of more than $7 million; 200 5,200-cu-ft jumbo covered hoppers for grain and other bulk commodity use, to be built by Pullman-Standard at a cost of more than $3.5 million; and 200 gondolas for coil steel, to cost $3.8 million, for which bids will be opened next month. N&W's box car rebuilding program will cost more than $5.2 million. About 200 of the 1,200 cars to be rebuilt will be for the N&W's subsidiary, the Norfolk, Franklin & Danville.

► *Seaboard Air Line.*—Ordered 235 40-ft box cars from Evans Products Co. at a cost of approximately $3 million. The cars are scheduled for delivery early in the third quarter of this year.

► *January Bad Order Ratio 0.6% Lower than Last Year.*—Class I roads on Jan. 1, 1966, owned 1,480,570 freight cars, 14,133 less than on Jan. 1, 1965, according to AAR report summarized below. Bad Order Ratio was 0.6% lower than on Jan. 1, 1965.

	Jan. 1, 1966	Jan. 1, 1965	Change
Car ownership	1,480,570	1,494,702	—14,133
Waiting repairs	78,111	88,507	—10,396
Repair Ratio	5.3%	5.9%	— 0.6%

LOCOMOTIVES

► *Rock Island*—Ordered five Century 415, 1,500-hp diesel-electric utility locomotives from Alco for delivery in June. This is Alco's first order for the new locomotive, ninth model in the company's Century series. (See p. 7).

► *Norfolk & Western.*—Will order 150 diesel locomotives of six types ranging in horsepower from 2,750 to 3,600. The units will be built by EMD, Alco and General. Total cost of the order will be more than $37 million, and deliveries will begin in March.

NEW FACILITIES

► *Missouri Pacific.*—Ordered 164 2R series radio units for mobile and base-station operations from Union Switch & Signal division of WABCO.

► *Pakistan Western Railroad.*—Ordered 57 radio sets for use in locomotives and 148 portable Carryphone radio units from Union Switch & Signal division of WABCO.

► Santa Fe —Ordered 97 locomotive radio sets, model 2R54CT, and 51 portable Carryphones from Union Switch & Signal division of WABCO.

YOU OUGHT TO KNOW

Concrete ties for new line: Frisco's new 32.3-mile line to serve a mineral-production area in southeastern Missouri (RA, Dec. 20/27, p. 74) will be constructed throughout with prestressed concrete ties. The ties will be spaced on 30-inch centers and about 70,000 will be required. Contract for the ties has been awarded to American Concrete Crosstie Corp., Tampa, Fla. They will be manufactured at a plant to be established by American Concrete Crosstie at Kansas City, Mo., on the site of Frisco's former Coburg yard, now abandoned.

Ten-year rail-welding contract: The Pennsylvania has awarded a contract to the Railway Automated Machinery Co. (RAMCO), a subsidiary of Nationwide Leasing Co., for the construction and operation for ten years of a continuous rail-welding plant at Columbus, Ohio. The contract was announced jointly by Howard C. Kohout, general manager of PRR's Western region, and Robert P. Underwood, president of RAMCO. Scheduled to begin operation in early June, the plant is expected to turn out about 300 track-miles of welded rail a year. Part of it is destined to be installed in PRR tracks between Washington and New York as part of the program to inaugurate high-speed passenger service in the Northeast Corridor.

'Don't forget to ask': Frisco salesmen have a new gadget on their desks these days—a large, styrofoam question mark. It's part of a new sales campaign, "Ask the Big Question," in which Frisco's men are being reminded to get shipper answers to the query: "Are you using truck service from, to or through Frisco territory?" The aim is to get still further increases in piggyback traffic—which capped a decade of growth in 1965 with a 30% gain from '64 levels.

Waterside industrial growth: There was a total of 512 new plant developments along navigable waterways in 1965, according to figures compiled by the American Waterways Operators, Inc. The figure includes new construction and proposed expansion of existing facilities. In 1964, there were 407 industrial expansions and developments along water-oriented sites. Chemical companies led all other industries in last year's development, accounting for 149 facilities.

Jenks heads N.U. group: Missouri Pacific President Downing B. Jenks is the new chairman of the advisory committee of the Transportation Center at Northwestern University. Jenks, a charter member of the committee, succeeds J. W. Hershey, chairman of the board of American Commercial Lines.

New peak for ACL: Atlantic Coast Line is the latest railroad to report record high revenues in 1965. ACL's gross operating revenues came to $200.9 million—up 7.27% from the 1964 level. The road's net income rose 17.76%, from $15.7 million to $18.5 million. The outlook? Says ACL President W. T. Rice: "The dynamic growth of the Southeast means continued growth in traffic for the railroads serving the region."

One millionth rider: The Reading, which expects to carry some 12 million passengers on its lines in 1966, has already checked off its first million riders for this year. Passenger No. 1 million got a TV set and 12 dinners for two at a restaurant. "Our millionth passenger is important to us," said Reading President Charles E. Bertrand, "because this symbolizes the success of 'Operation Reading,' the experiment in finding ways of preserving our passenger service." A computer is picking each millionth rider to be honored by the road.

Truck tonnage: Intercity truck tonnage in the week ended Jan. 29 was 2.7% below that of the previous week, and 3.0% above the volume in the corresponding week of 1965, according to American Trucking Associations.

Current statistics

Net Income	
9 mos., 1965	$540,000,000
9 mos., 1964	500,000,000
Carloadings, revenue freight	
5 wks., 1966	2,590,425
5 wks., 1965	2,615,183
Freight cars on order	
Jan. 1, 1966	45,016
Jan. 1, 1965	32,698
Freight cars delivered	
12 mos., 1966	77,812
12 mos., 1965	69,078
Serviceable cars	
Jan. 1, 1966	1,402,459
Jan. 1, 1965	1,398,503

(*Continued from page 35*)

FLORIDA EAST COAST.—C. W. Cunningham appointed manager—sales and services, Central Region, Chicago.

FORT WORTH & DENVER-ROCK ISLAND.—Effective Jan. 1, the joint FW&D-RI operation known as the Joint Texas division, extending from Dallas to Galveston, Tex., transferred from the Rock Island's jurisdiction to that of the FW&D. **H. E. Moyer,** superintendent, Wichita Falls, Tex., has jurisdiction over the territory. **J. E. Schobert** named trainmaster-road foreman, Joint Texas division, Teague, Tex.

GREAT NORTHERN.—Richard M. Brestel, commercial agent, Minneapolis, named general agent, Tacoma, Wash., to succeed **Paul Meyers,** retired.

T. W. Mackenroth, master mechanic, Seattle, Wash., appointed superintendent, Klamath Division, Klamath Falls, Ore.

INTERSTATE COMMERCE COMMISSION.—Raymond G. Seeds appointed a permanent member, Board of Suspension, succeeding **Herbert E. Warren,** who retired Nov. 9 after nearly 28 years of Federal service. Mr. Seeds had been serving as temporary board member.

Andrew Anthony, Jr., appointed assistant secretary of the ICC, succeeding **Mrs. Bertha F. Armes,** who retired Dec. 31 after a 40-year career with the Commission. Mr. Anthony was a management analyst, Office of Managing Director.

George A. Meyer, assistant director, Bureau of Operations & Compliance, appointed director of the Bureau, succeeding **Brig Gen. Herbert Qualls,** who retired Dec. 30. **Martin E. Foley,** regional manager of the ICC at Boston, succeeds Mr. Meyer. **Robert Abare,** special assistant to the ICC's managing director, Washington, named regional manager at Boston for the area which includes New York, New Jersey and the six New England States.

JAPANESE NATIONAL RYS.—Koichi Hatagawa, former chief, Planning Section, Purchasing & Stores Department, Tokyo, has assumed the post of director, North American office at 45 Rockefeller Plaza, New York. Mr. Hatagawa succeeds **Sachio Nakanishi,** who returned to Tokyo last fall to become director of the company's Welfare Department.

MINNEAPOLIS, NORTHFIELD & SOUTHERN.—R. E. Versen, general traffic manager, Minneapolis, Minn., appointed vice president—public relations and his former position abolished. **G. E. Johnson,** assistant general freight agent—rates and divisions, named general freight agent—rates and divisions. **John R. Fraser** and **L. E. Martin** appointed general agents.

MISSOURI PACIFIC.—L. B. Griffin, superintendent, Dallas-Ft. Worth Terminal division, and **Ft. Worth Belt Railway,** Ft. Worth, Tex., named superintendent, St. Louis Terminal division, St. Louis, to succeed **Howard Jones,** retired. **J. E. Bernhardt** succeeds Mr. Griffin. **J. L. James,** trainmaster, Kansas City Terminal division, Kansas City, Mo., named assistant superintendent, **Union Railway,** Memphis, Tenn. **D. W. Welch,** assistant trainmaster, Pine Bluff, Ark., replaces Mr. James.

NATIONAL CAPITAL TRANSPORTATION AGENCY.—Albert J. Roohr has rejoined the NCTA as an urban planner in the office of planning and finance. This federal agency is developing a surface and subway rapid transit system for the Washington area. Mr. Roohr was a member of the NCTA planning staff in 1963 and 1964, when he joined Porter, Armstrong, Ripa & Associates, an engineering and planning firm in Newark, N.J.

NEVADA NORTHERN.—W. R. Armstrong, Jr., superintendent and chief engineer, East Ely, Nev., has retired because of ill health, after 28 years of service.

NEW YORK CENTRAL.—Arthur E. Baylis, vice president—staff, New York, asked to be relieved of his duties, effective Feb. 1 Mr. Baylis will engage in general transportation and distribution consulting services. The NYC will retain him as a traffic and marketing consultant.

Joseph M. Ostrow, manager of pricing for agricultural and food commodities, named assistant general manager of pricing. **Richard H. Steiner,** manager of agriculture industry services, appointed manager of pricing research.

Ronald Ashton, chief train dispatcher, New York, named suburban trainmaster, Hudson and Harlem divisions. **Fred Hurvich,** tax attorney, appointed manager of insurance. **William M. McLaughlin,** manager of personnel development, appointed manager of marketing administration.

Laurance A. McCabe, service and equipment supervisor for eastern territory, New York, appointed division freight sales manager, Albany, N.Y., succeeding **James M. Donovan,** retiring after 48 years with the NYC. **Arthur L. Steinfeld,** assistant industrial engineer, New York promoted to industrial engineer. **William M. Paravano,** traveling storekeeper, Collinwood, Ohio, appointed automotive engineer, Western District, Cleveland. **P. R. Oliver,**

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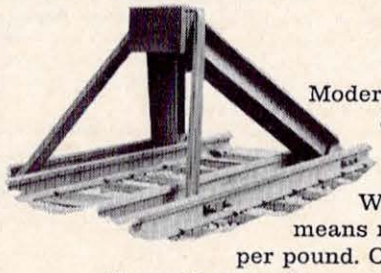

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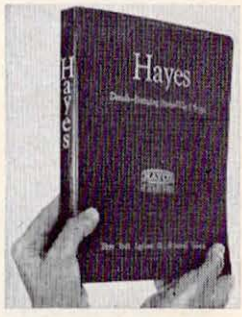

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supervisor car maintenance—freight, New York, appointed manager of car maintenance there, with jurisdiction over freight and passenger car facilities other than shops. **V. F. Kania,** supervisor car maintenance—special equipment, named manager of heavy repairs and special equipped cars, New York, and his former position abolished.

A. Vitale appointed mechanical engineer, New York.

Charles P. Rath, assistant general claims attorney, retired Dec. 31 because of ill health.

Thomas E. Slowey appointed chief of police, Lake and Toledo Divisions, Western District, Cleveland.

R. O. Walters appointed to the newly established position of director of rail-highway terminals, New York.

NORFOLK & WESTERN.—Cecil R. Purdum, traffic manager, New York, promoted to assistant vice president—sales there, succeeding **Richard A. Julian, retired. Vincent G. Berdolt,** assistant traffic manager, promoted to traffic manager, succeeding Mr. Purdum. **Ferd G. Altenburg,** traffic manager—sales Chicago, retired.

Robert W. Coffey, system manager—special services, Roanoke, named manager equipment and utilization, a new position.

Charles J. Steffen, Jr., and **Carl S. Jensen** appointed assistant managers equipment. **Conrad T. Nettemeyer** and **Carson P. Stiff, Jr.,** named assistant managers utilization. All are new positions at Roanoke. Mr. Steffen was formerly manager—special services, traffic—sales department. Mr. Jensen was assistant manager—special services, traffic department. Mr. Nettmeyer was assistant manager—special services, St. Louis. Mr. Stiff was chief traveling agent, Roanoke.

Rudolph M. Savodnik, assistant freight traffic manager—rates, named general freight traffic manager—rates, Cleveland. **James J. Ahern,** general freight agent—rates, Cleveland, succeeds Mr. Savodnik.

J. E. Monk appointed supervisor bridges and buildings, Norfolk division, Crewe, Va., succeeding **E. S. Chaffin,** retired.

Carl Bruce Sterzing, Jr., and **Robert J. Cooney** named assistant general solicitors, at Roanoke and St. Louis, respectively. **Walter C. Dissen** and **Richard A. Keeney** appointed assistant general attorneys at Roanoke and Cleveland, respectively.

Welton E. Murphy, assistant freight commerce manager, named freight commerce manager, succeeding **Shelby V. Akers,** retired. **Otis M. Gilliam,** appointed assistant freight traffic manager—rates, succeeding **Leighman E. Hawkins,** who replaces Mr. Murphy.

Howard F. Park, Jr.
GSI

Milton H. Gardner
EMD

W. Stuart Johnson
Brenco

James R. Rose
Townsend Co.

Supply Trade

Howard F. Park, Jr., vice president—sales, **General Steel Industries, Inc.,** Granite City, Ill., has been elected senior vice president.

John R. Patton has been named director of research and chief metallurgist, **Castings Division, General Steel Industries, Inc.,** Granite City.

Milton H. Gardner, assistant general sales manager in charge of locomotive sales, **Electro-Motive Divison, General Motors,** La Grange, Ill., has been promoted to general sales manager, succeeding **Victor E. Rennix,** who retired Jan. 31.

W. Stuart Johnson, vice president—sales, **Brenco, Inc.,** Petersburg, Va., has been elected executive vice president there (RA, Jan. 17, p. 132).

James R. Rose, midwest district manager, **Townsend Co.,** a Textron affiliate, has been appointed manager—railway sales, Engineered Fasteners Division, with headquarters remaining at Chicago. In his newly created position, Mr. Rose will supervise sales of lockbolts and rivets to railroads and car builders.

John B. Aspegren, Eastern District manager, **North American Car Corp.,** has been appointed a vice president. He will continue to head the Eastern District operations, with headquarters at New York.

J. R. Mitchell has been named application manager for the newly-established ground transportation brush group, **Carbon Products Division, Union Carbide Corp.** Functioning as part of the carbon brush marketing organization, the new department will handle application engineering and customer technical service work in connection with carbon brushes used by railroads, industrial rail operations, transit systems, and diesel-electric trucking. **William Pinch, Jr.,** has been named an application engineer.

The following appointments have been made on the Research & Development staff, **Transportation Equipment Division, Evans Products Co.,** Plymouth, Mich.: **W. K. MacCurdy,** chief engineer—research; **H. W. Chapman,** chief engineer—development; **P. A. Tracht,** laboratory director; **R. B. Keene,** director of patents; **M. Nichols,** administrative assistant to general manager; **N. A. Passur,** engineering consultant, and **C. W. Hook,** market analyst.

A $3 million car-building plant expansion on its Plymouth, Mich., property has been announced by the Transportation Equipment Division of **Evans Products Co.** The latest expansion program followed an announcement made a few months ago of a $1.5 million expansion program at the same facility.

Charles R. Jones has been appointed manager, Transportation Products Division, **Atlas Chemical Co.**

Southern Iron & Equipment Co., Chamblee, Ga., has constructed a 14,000 square foot car shop on the 27-acre DeKalb-Rogers Industrial Park which it purchased at a cost of nearly $650,000. Production began this month on 600 pulpwood railway cars. **Robert L. Lawson,** production engineer at Chamblee, is plant manager.

OBITUARY

James L. Brown, 79, retired general superintendent of transportation, **Milwaukee,** died Jan. 31 in St. Anne's Hospital, Chicago.

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THE ACTION PAGE

Research: Facts and fancies

Recent moves in Washington aimed at research to improve rail service in urban areas in the East are prompting some "experts" to lay rail troubles at the door of "inadequate research."

It is odd to hear them talk, when one remembers the computers, the new signals and communications, the new power, the startling developments in rolling stock, and the complex marketing, rate and technique developments that have been rejuvenating railroads in recent years. As New York Central's President A. E. Perlman recently noted there are individual railroads that spend more on research than the entire airline industry.

Now this paper will yield place to no one when it comes to searching out and supporting the research and development people who have already contributed so much to the shape of today's carriers—the men in the laboratories of railroads, the AAR Research Center, railroad suppliers, universities and independent research firms. Conceiving and building the super railroads that will be needed by U. S. society in the years ahead strikes us as a challenging job. Not only the efforts of the R&D crowd, but the work of platoons of mathematicians, computer theorists, social scientists, industrial engineers and other specialists will be needed to create super railroads in such fashion as to minimize losses from the billions already invested in rail plant and equipment and maximize the values that can be created by R&D.

But, we also think that simple prudence dictates that industry leaders (and government officials, too, now that they've dealt themselves in) examine carefully the proposals being made for "revitalizing" rail research.

Fuzzy thinking or revelation?

These proposals, it seems to us, are often pleonastic (which one wag has defined as "a Pfc of an idea guarded by an army of words") and inadequately grounded in the economic, commercial, regulatory and technical realities of our complex industry. Fuzzy thinking often passes for revelation when the subject is research.

Speeches from this new tribe of industry critics urge more research, basic research, applied research, joint rail-supplier research and even no research—this last from those who feel the supply industry is obliged to do whatever research the carriers need. This kind of discussion-by-revelation often depends upon assumptions that are hard to prove and ends with recommendations that are difficult to judge from an industry point of view and almost impossible to evaluate from an individual railroad point of view. As General Railway Signal Co. President J. K. Records noted recently, "It's easy to spend the taxpayers' money. The railroad industry spends its own."

It is about as difficult to be against research as it is to be against motherhood. This is why so much fuzzy thinking about research goes unchallenged, leaving only a residue of uneasiness in the industry that not enough research is being pursued.

With this in mind, we would like to commend to the industry the modest and, it seems to us, sensible proposal made by Western Maryland President W. A. Grotz last June (RA, June 21, 1965, p. 55), when he suggested the carriers take joint action to step up the rate at which the industry assimilates R&D "fallout" from other fields.

Closing the R & D gap

Grotz, like most of the industry's top men, knows the carriers have been closing the technological gap between railroads and their competition. It hasn't been easy. Why should anyone think railroads, hobbled with regulation and saddled with onerous competitive handicaps, could keep pace (in dollars) with research programs that are substantially financed by government for the airlines and by the automotive industry for the truckers? Grotz (and this paper) find nothing strange about the rate at which the industry has been able to adapt scientific fallout from outside R&D in time past. We'd like to see it speeded up. But we are quite aware of how the gap was created. For more than a quarter of a century complex restrictive relationships between profitability, competition, investment, morale, personnel and the restraints imposed by rules, interchangeability requirements and labor agreements have hindered progress.

Now, with the industry battling the competition with ever-increasing effectiveness, the gap can be bridged.

It is an urgent requirement. Wrong use of the funds from government for industry R&D and/or failure to use the growing ability of the carriers to design themselves into the future can have disastrous consequences for the industry's employees, shareholders, shippers and for the country, too. The urgency can be seen everywhere in the achievements of our competitors, aided by government, as in super highways, double bottoms and jet cargo planes.

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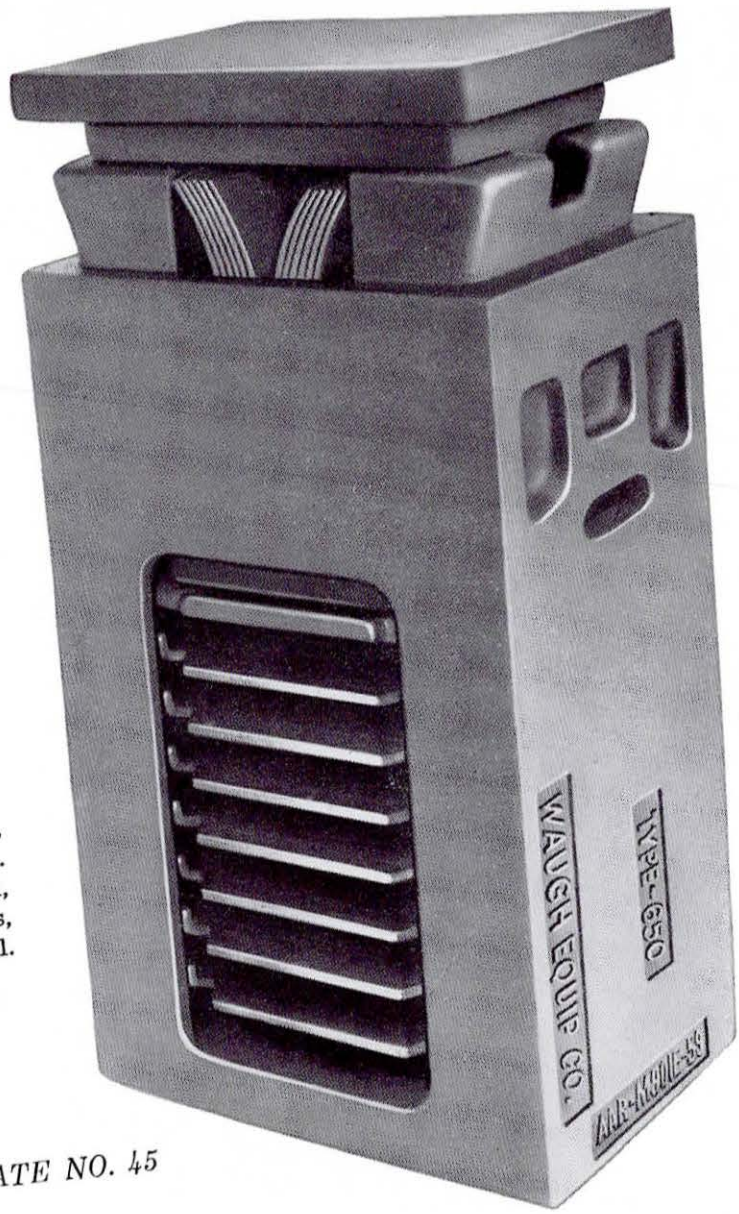

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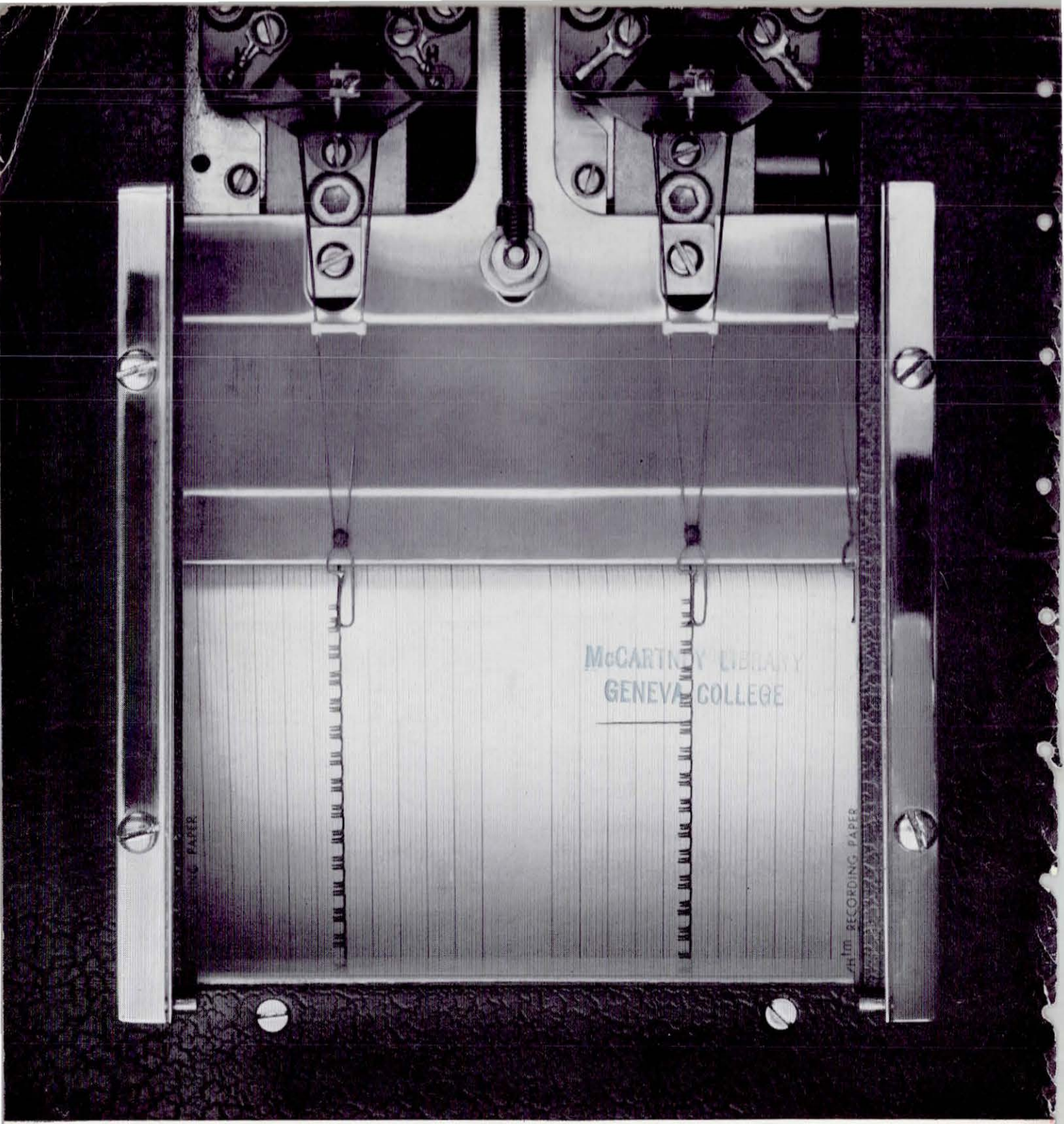

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